

INPUT

STRATEGIC MARKET PERSPECTIVE

How Users Choose Vendors

Client/Server Software Program

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How Users Choose Vendors

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Abstract

This report analyzes the client/server strategies of leading software and systems vendors. It shows how companies differentiate themselves to appeal to users. It also discusses the platforms vendors support, vendors' alliances and their competition. For each company, an assessment of its future direction is provided.

A survey of 110 corporate users rates their satisfaction with vendors. The survey also provides insights into vendor revenues and growth rates.

The report contains 119 pages and 24 exhibits.

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C/S Software Program

How Users Choose Vendors

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Table of Contents

I	Introduction	1
	A. Purpose of the Report	1
	B. Scope of the Report	2
	C. Methodology	2
	1. Primary Research	2
	2. Secondary Research	2
	3. User Survey Demographics	2
	D. Report Structure	5
	E. Related Reports	5

II	Executive Overview	7
	A. Industry Structure	7
	B. Satisfaction with Vendors	8
	C. Vendor Revenues	8
	D. Vendor Highlights	9
	E. Why Do Users Choose Certain Vendors?	10

III	Vendor Analysis	13
	A. Andersen Consulting	13
	1. Company Focus	13
	2. Product Strategy	13
	3. User Appeal	14
	4. Platforms	15
	5. Markets and Applications	15
	6. Alliances and Partnering	17
	7. Primary Competitors	18
	8. User Satisfaction	18
	9. Expected Announcements and Strategic Direction	18
	B. Borland	18
	1. Company Focus	18
	2. Product Strategy	19
	3. User Appeal	19
	4. Platforms	19
	5. Markets and Applications	19
	6. Alliances and Partnering	20
	7. Primary Competitors	20
	8. User Satisfaction	20
	9. Expected Announcements and Strategic Direction	21
	C. Centura Software (formerly Gupta Corporation)	22
	1. Company Focus	22
	2. Product Strategy	22
	3. User Appeal	23
	4. Platforms	23
	5. Markets and Applications	24
	6. Alliances and Partnering	24
	7. Primary Competitors	24
	8. User Satisfaction	25
	9. Strategic Direction	25
	D. Compaq Computer Corporation	26
	1. Company Focus	26
	2. Product Strategy	26
	3. User Appeal	26
	4. Platforms	26
	5. Markets and Applications	27

6. Alliances and Partnering	27
7. Primary Competitors	27
8. User Satisfaction	28
9. Expected Announcements and Strategic Direction	28
E. Computer Associates International	29
1. Company Focus	29
2. Product Strategy	30
3. User Appeal	31
4. Platforms	31
5. Markets and Applications	32
6. Alliances and Partnering	32
7. Primary Competitors	32
8. User Satisfaction	32
9. Expected Announcements and Strategic Direction	32
F. Data General	33
1. Company Focus	33
2. Product Strategy	33
3. User Appeal	34
4. Platforms	34
5. Markets and Applications	34
6. Alliances and Partnering	35
7. Primary Competitors	35
8. User Satisfaction	35
9. Expected Announcements and Strategic Direction	35
G. Dell	36
1. Company Focus	36
2. Product Strategy	36
3. User Appeal	37
4. Platforms	37
5. Markets and Applications	37
6. Alliances and Partnering	37
7. Primary Competitors	38
8. User Satisfaction	38
9. Expected Announcements and Strategic Direction	38
H. Digital Equipment Corporation	39
1. Company Focus	39
2. Product Strategy	39
3. User Appeal	40
4. Platforms	40
5. Markets and Applications	40

6. Alliances and Partnering	40
7. Primary Competitors	41
8. User Satisfaction	41
9. Expected Announcements and Strategic Direction	41
I. Dun & Bradstreet Software	42
1. Company Focus	42
2. Product Strategy	42
3. User Appeal	43
4. Platforms	43
5. Markets and Applications	43
6. Alliances and Partnering	44
7. Primary Competitors	44
8. User Satisfaction	44
9. Expected Announcements and Strategic Direction	45
J. EDS	45
1. Company Focus	45
2. Product Strategy	45
3. User Appeal	45
4. Platforms	46
5. Markets and Applications	46
6. Alliances and Partnering	46
7. Primary Competitors	47
8. User Satisfaction	47
9. Expected Announcements and Strategic Direction	47
K. Fujitsu	47
1. Company Focus	47
2. Product Strategy	48
3. User Appeal	48
4. Platforms	49
5. Markets and Applications	49
6. Alliances and Partnering	49
7. Primary Competitors	49
8. User Satisfaction	50
9. Expected Announcements and Strategic Direction	50
L. Hewlett-Packard	50
1. Company Focus	50
2. Product Strategy	51
3. User Appeal	51
4. Platforms	51
5. Markets and Applications	51

6. Alliances and Partnering	52
7. Primary Competitors	52
8. User Satisfaction	52
9. Expected Announcements and Strategic Direction	53
M. Hitachi	53
1. Company Focus	53
2. Product Strategy	53
3. User Appeal	54
4. Platforms	54
5. Markets and Applications	54
6. Alliances and Partnering	54
7. Primary Competitors	54
8. User Satisfaction	55
9. Expected Announcements and Strategic Direction	55
N. IBM	56
1. Company Focus	56
2. Product Strategy	56
3. User Appeal	57
4. Platforms	57
5. Markets and Applications	57
6. Alliances and Partnering	58
7. Primary Competitors	58
8. User Satisfaction	58
9. Expected Announcements and Strategic Direction	58
O. Informix Software	59
1. Company Focus	59
2. Product Strategy	59
3. User Appeal	60
4. Platforms	60
5. Markets and Applications	60
6. Alliances and Partnering	61
7. Primary Competitors	61
8. User Satisfaction	61
9. Expected Announcements and Strategic Direction	62
P. Microsoft	62
1. Company Focus	62
2. Product Strategy	63
3. User Appeal	63
4. Platforms	63
5. Markets and Applications	63

6. Alliances and Partnering	63
7. Primary Competitors	64
8. User Satisfaction	64
9. Expected Announcements and Strategic Direction	64
Q. NEC Corporation	65
1. Company Focus	65
2. Product Strategy	65
3. User Appeal	66
4. Platforms	66
5. Markets and Applications	66
6. Alliances and Partnering	66
7. Primary Competitors	66
8. User Satisfaction	66
9. Expected Announcements and Strategic Direction	67
R. Novell	67
1. Company Focus	67
2. Product Strategy	67
3. User Appeal	67
4. Platforms	68
5. Markets and Applications	68
6. Alliances and Partnering	68
7. Primary Competitors	68
8. User Satisfaction	68
9. Expected Announcements and Strategic Direction	69
S. Oracle	69
1. Company Focus	69
2. Product Strategy	69
3. User Appeal	70
4. Platforms	70
5. Markets and Applications	71
6. Alliances and Partnering	72
7. Primary Competitors	72
8. User Satisfaction	72
9. Expected Announcements and Strategic Direction	72
T. PeopleSoft	73
1. Company Focus	73
2. Product Strategy	73
3. User Appeal	73
4. Platforms	73
5. Markets and Applications	73

6. Alliances and Partnering	73
7. Primary Competitors	74
8. User Satisfaction	74
9. Expected Announcements and Strategic Direction	74
U. SAP	75
1. Company Focus	75
2. Product Strategy	75
3. User Appeal	75
4. Platforms	76
5. Markets and Applications	76
6. Alliances and Partnering	76
7. Primary Competitors	77
8. User Satisfaction	77
9. Expected Announcements and Strategic Direction	77
V. SHL Systemhouse (part of MCI)	78
1. Company Focus	78
2. Product Strategy	78
3. User Appeal	78
4. Platforms	78
5. Markets and Applications	79
6. Alliances and Partnering	79
7. Primary Competitors	79
8. User Satisfaction	79
9. Expected Announcements and Strategic Direction	79
W. Sybase/Powersoft	79
1. Company Focus	80
2. Product Strategy	80
3. User Appeal	80
4. Platforms	81
5. Markets and Applications	82
6. Alliances and Partnering	82
7. Primary Competitors	82
8. User Satisfaction	82
9. Expected Announcements and Strategic Direction	83

IV	Customer Satisfaction	85
	A. Customer Satisfaction	85
	1. Systems Vendors	85
	2. Systems Software Vendors	87
	3. Applications Vendors	89
	4. Summary	91

V	Vendor Positioning	93
	A. Vendor Revenues	93
	B. Average Size of Account	96
	C. Highly Rated Platforms	97
	D. Microsoft, Oracle and Computer Associates Battle It Out	98
	1. Revenue Comparison	98
	2. Strategic Comparison	99
	3. Product Line Comparison	100
	4. Outlook	100
	E. Can PC Vendors Challenge Mainframes?	101
	F. Are Services Needed To Be A Successful C/S Vendor?	101
	1. Services Continue To Boost Hardware Manufacturers' Revenues	101
	2. Faster Growth Is Possible by Using Others For Services	102
	G. The Internet Drives Vendors in New Directions	102
	1. Multimedia Database Servers Debut from Major Vendors	102
	2. Novell Carves Out Position in Network Software	102
	3. Applications Continue To Grow Despite the Impact of the Internet	102
	H. Intense Competition Forces Business To Change	103
	1. Tool Vendors See Shakeout	103
	2. Applications Battle for the SOHO Market	103

A	Definitions	105
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B	Vendor Names and Addresses	111
	A. Vendors and Organizations	111

C	User Questionnaire	115
	A. User Questionnaire	115

(Blank)

Exhibits

I

-1	Survey Respondents by Industry	3
-2	Survey Respondents by Annual Revenues	4
-3	Respondents' Responsibilities	4

II

-1	Vendor Classification	7
-2	Vendor Satisfaction Survey Summary	8
-3	Vendor Revenue Growth Rates	8

III

-1	Vertical Market Segmentation	16
-2	CA Revenues By Platform For Fiscal 1995	30
-3	Oracle Revenues By Product Category For Fiscal 1995	70
-4	Oracle Revenues By Platform For Fiscal 1995	71

IV

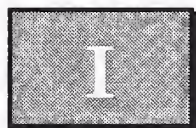
-1	Number of Mentions for Systems Vendors	86
-2	Vendor Satisfaction for Systems Vendors	87
-3	Frequency of Mention for Systems Software Vendors	88
-4	Vendor Satisfaction for Systems Software Vendors	89
-5	Frequency of Mention for Applications Vendors	90
-6	Vendor Satisfaction for Applications Vendors	91

V

-1	Worldwide Vendor Revenues	94
-2	Top Ten Vendors, 1995 and 2000	95
-3	Average Revenues of Customers by Vendor	96
-4	Vendors with Average Rating Greater Than 4 For Client and Server Platforms	97
-5	Revenue Comparison: CA: Microsoft, Oracle	98
-6	Strategy Comparison: CA: Microsoft, Oracle	99
-7	Product Line Comparison: CA, Microsoft, Oracle	100

B

B-1	Names and Addresses of Vendors	111
-----	--------------------------------	-----



Introduction

This chapter describes the purpose and scope of this report and lists related reports published by INPUT.

A

Purpose of the Report

Where are client/server (C/S) vendors heading and who are they? This report provides insights into C/S vendors, their future direction and alliances. It examines how each vendor differentiates itself from competitors and examines platform strategies. It examines user satisfaction with vendors, based on a 110-user telephone survey.

The report answers the questions:

- What are the strategies of leading C/S vendors?
- What markets are they strong in?
- Where do they have a competitive advantage?
- How satisfied are users with vendors?
- What are the future directions of vendors and what announcements can be expected from them?

This analysis is intended for:

- Purchasers of C/S systems
- Vendors of C/S hardware and software
- Investors in C/S technology

Individual exhibits and charts may be used for presentations and sales support, provided the source is acknowledged as INPUT.

B

Scope of the Report

The user survey is confined to the U.S. corporate market. Users' platform choices, C/S expenditures and budget growth rates are analyzed in another INPUT report, *Client/Server Software Product Directions*. Not included in this report are market forecasts. These are found in INPUT's *Worldwide Client/Server Software Market, 1995-2000*. Also, this report does not cover professional services or systems integration.

C

Methodology**1. Primary Research**

Over twenty vendors were analyzed using publicly available information and telephone interviews. INPUT surveyed 110 user organizations by telephone. They were asked how satisfied they were with their vendors as part of a larger survey on C/S software trends.

2. Secondary Research

Trade publications and on-line information networks provided additional information for this report. Industry trade shows and vendor literature provided additional insights.

3. User Survey Demographics

Exhibit I-1 shows the breakdown of survey respondents by industry.

Exhibit I-1

Survey Respondents by Industry

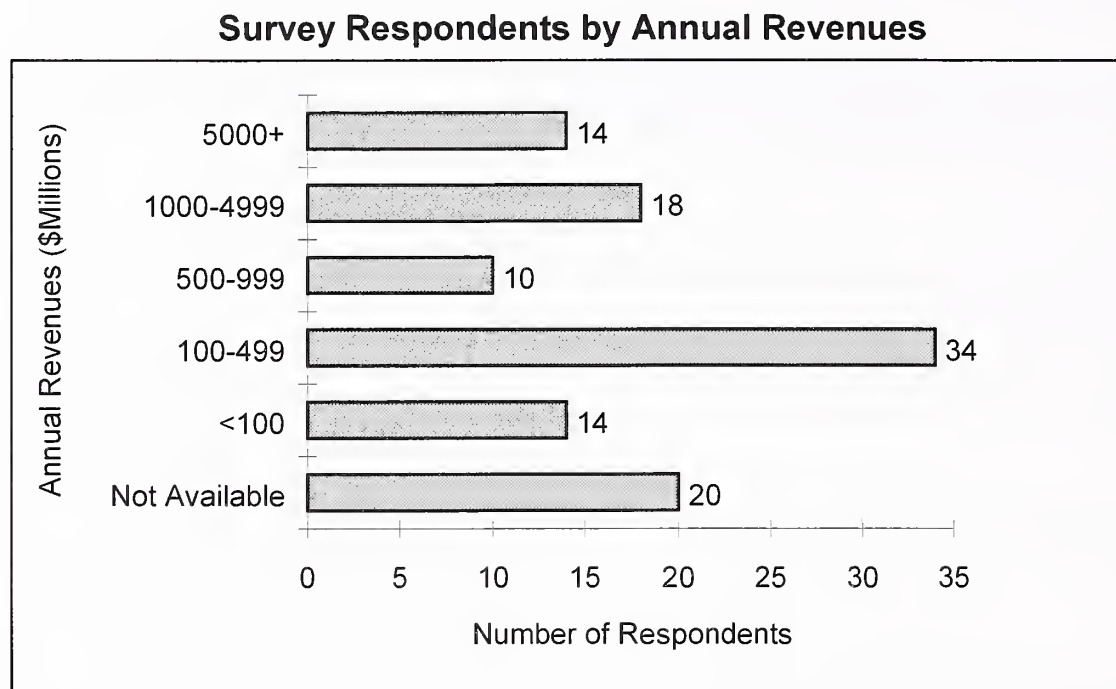
Industry Group	Respondents in Group	Industry	Respondents in Industry
Financial and Business Services	23	Banking and Finance	9
		Business Services	6
		Insurance	8
Government, Education, Health and Nonprofit	21	Education	8
		Government - Federal	2
		Government - State and Local	6
		Nonprofit Organizations	2
		Health Services	3
Manufacturing	42	Manufacturing - Process	15
		Manufacturing - Discrete (not Printing and Publishing)	20
		Manufacturing - Printing and Publishing	7
Distribution and Trade	14	Retail	10
		Transportation	3
		Wholesale	1
Telecommunications and Utilities	10	Telecommunications	2
		Utilities	8
Total	110		110

110 Respondents

Source: INPUT C/S User Survey 1995

One hundred and ten (110) respondents identified almost 400 applications being maintained, upgraded or developed in 1996. Respondents were selected to cover a range of industries. The sample is biased slightly away from the high-tech industry, where it proved difficult to identify respondents who could answer a phone survey. Hence the survey reflects traditional industries, with a strong emphasis on manufacturing. Exhibit I-2 shows the distribution of respondents' company size by annual revenues.

Exhibit I-2

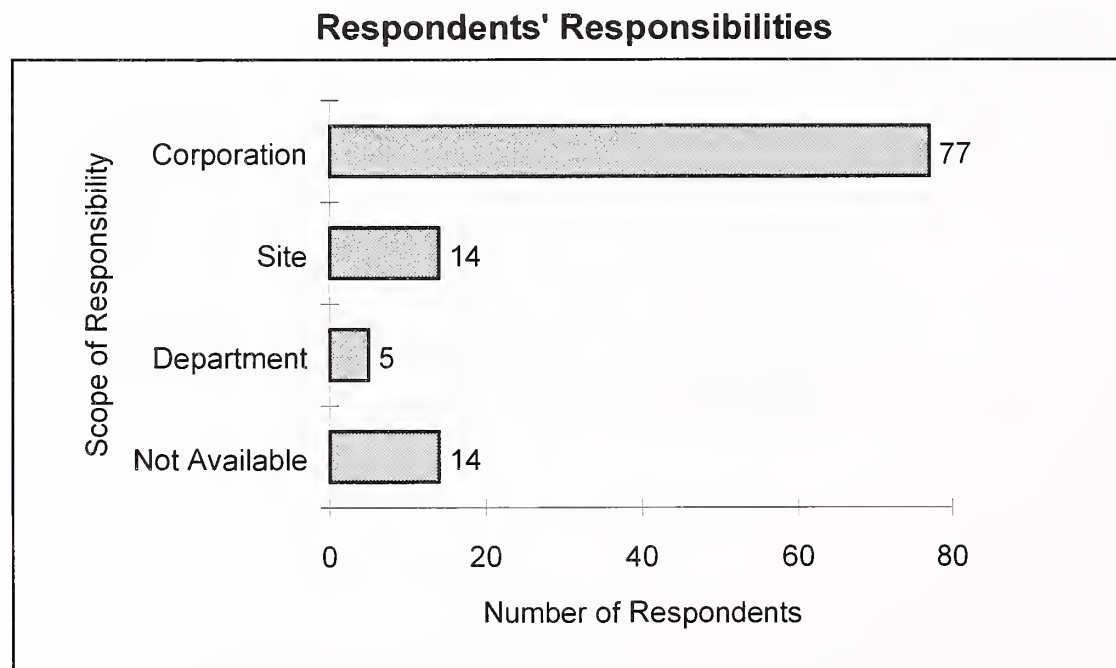


110 Respondents

Source: INPUT C/S User Survey 1995

Exhibit I-3 shows the scope of their responsibilities.

Exhibit I-3



110 Respondents

Source: INPUT C/S User Survey 1995

Respondents were mainly from IS departments, representing their corporation, site or department. Some organizations, such as those in government and education, were unable to provide revenue information. The sample was selected to provide a range of organizations.

D**Report Structure**

The report is structured as follows:

- Chapter II provides an executive overview and also summarizes the main findings of the report.
- Chapter III analyzes the strategies of leading vendors
- Chapter IV provides an analysis of customer satisfaction
- Chapter V reviews vendor positioning
- Appendix A provides definitions
- Appendix B lists vendors tracked in INPUT's C/S program
- Appendix C contains the survey questionnaire

E**Related Reports**

INPUT's C/S Software Program provides a comprehensive analysis of vendors and technology directions. The following reports in the C/S program provide additional information:

- *Worldwide Client/Server Software Market, 1995-2000*
- *Client/Server Software Product Directions*
- *Component Software: ORBs, OLE and OpenDoc*
- *Internet Security: The Impact of Firewalls on Client/Server Applications*
- *Client/Server Systems Management Software*
- *Middleware: Is DCE the Answer?*
- *Object-oriented Platforms for C/S Systems*
- *The Client/Server Explosion—How Users Choose Platforms*
- *Client/Server Market Analysis, 1993-1998*
- *Client/Server Service Opportunities—Europe, 1993-1998*
- *Client/Server Impact on Major Project Contracting—Europe, 1993-1998*
- *Client/Server Trends in the Federal IT Market: 1994*

INPUT's Market Analysis Program provides comprehensive forecasts in software and services. It also provides analysis of vertical markets. Reports from the Market Analysis Program include:

- *U.S. Systems Software Market, 1995-2000*
- *U.S. Applications Solutions Market, 1995-2000*
- *Worldwide Market Forecast Compendium, 1994-1999*
- *U.S. Market Forecast Compendium, 1995-2000*

INPUT also publishes market analysis reports that cover services as part of its Systems Integration and Outsourcing Programs. They include:

- *Systems Integration and Professional Services Markets, 1994-1999*
- *The Relationship Between BPR and Systems Integration*
- *Strategies for Successful Alliances*

In addition, INPUT reviews vendor strategies in more detail in its Vendor Analysis Program. For vendor profiles not immediately available, INPUT's clients may custom order sets of profiles. Also, the European and U.S. federal government markets for information services are covered in a series of reports and research bulletins.



Executive Overview

This chapter briefly provides information on vendors and summarizes the main findings of the report.

A

Industry Structure

Exhibit I-1 shows the vendors covered in this report, divided into categories that reflect the structure of the industry.

Exhibit II-1

Vendor Classification

Category	Subcategory	Vendors
Systems vendors	PC hardware (U.S.)	Compaq, Dell
	Server hardware (U.S.)	Data General, Digital, Hewlett-Packard, IBM
	Hardware (Japan)	Fujitsu, Hitachi, NEC
Systems software vendors	Platforms and systems management	Computer Associates, Microsoft, Novell
	Databases primarily	Informix, Oracle, Sybase
	Development tools	Borland, Centura (Gupta), Powersoft (Sybase)
Applications vendors	Applications software	Dun & Bradstreet, PeopleSoft, SAP
	Systems integrators	Andersen Consulting, EDS, SHL Systemhouse

Source: INPUT

B**Satisfaction with Vendors**

Exhibit I-2 shows the average customer satisfaction ratings from the survey on a scale from 1 (very dissatisfied) to 5 (very satisfied) for their client/server platforms and solutions.

Exhibit II-2

Vendor Satisfaction Survey Summary

Average Rank	Companies
>=4	Hewlett-Packard
>=3.5 and <4	Compaq, IBM, Microsoft, Novell, PeopleSoft
>=3 and < 3.5	Andersen Consulting, Borland, Centura Software, Dell, Digital, Hitachi, Informix, NEC, Oracle, Powersoft (a Sybase subsidiary), SAP, Sybase, Local Reseller
<3	Computer Associates, Data General, Dun & Bradstreet Software, EDS, Fujitsu, SHL Systemhouse

Source: INPUT

C**Vendor Revenues**

Exhibit I-3 shows revenue growth rates from calendar year 1994 to 1995.

Exhibit II-3

Vendor Revenue Growth Rates

Average Rank	Companies
>50%	Informix, PeopleSoft
>30% and <=50%	Compaq, Computer Associates, Microsoft, Oracle, SAP
>15% and <=30%	Andersen Consulting, Dell, EDS, HP, Hitachi Information Systems, Sybase
>0% and <=15%	Data General, Digital, Dun & Bradstreet Software, Fujitsu, IBM, NEC, SHL Systemhouse
<=0%	Borland, Centura, Novell

Source: INPUT

D

Vendor Highlights

The impact of C/S systems on vendors means new opportunities that some companies, such as HP and Compaq are seizing, while others are being left behind. Below are some of the many observations made in the report regarding vendors:

- **Systems Vendors**
 - Compaq's revenues grew 36% from 1994 to 1995 because of server and networking sales; desktop and notebook PC sales were flat.
 - Data General has turned itself around by selling storage solutions and targeting niches with its AViiON computers. It will interconnect Intel-based PC boards for its next generation of machines.
 - Dell is more likely to target the corporate workstation market as it risks being crowded out of the server market by larger players.
- **Systems Software Vendors**
 - Borland and Centura Software (formerly Gupta) are facing increased competition and are racing to develop tools for Intranets and the Internet. These may not be enough to save them.
 - Computer Associates is on a collision course with Microsoft and Oracle. It needs an operating system to expand its product line. Growth has been steady, but is not fast enough at 33%.
 - Informix grew at 51%. Its parallel and object-oriented databases will propel its growth despite challenges from Fujitsu's Jasmine and Oracle 8.
 - Microsoft will not suffer because of competition from vendors who program for the Internet. It is vulnerable because it does not have as much server software as Oracle, Novell or SAP and programming is moving from the client to the server.

- Applications Vendors
- Dun & Bradstreet Software is being spun off as a separate company. Its *SmartStream* client/server applications are starting to be well received. The company is reviving. If it can leverage its solutions better it could be a formidable competitor.
- EDS will be spun off from General Motors. SHL Systemhouse has been acquired by MCI. Andersen, EDS and SHL continue to invest in advanced, flexible development tools, but are challenged by more agile vendors like Cambridge Technology Partners.
- Oracle and SAP are increasingly competing on vertical, rather than cross-industry solutions.

E

Why Do Users Choose Certain Vendors?

Vendors that are growing fast have:

- Perceived quality and value
- State-of-the-art technology
- Related their technology to improving their customers' business operations
- Many supplier and reseller relationships that they can leverage

The fastest growing opportunities are in:

- Cross-platform, scalable, easily partitioned applications
- Flexible systems that can be reconfigured after they have been installed
- Windows NT
- Internet and multimedia information storage, databases and retrieval
- Integrating massive systems that automate repetitive tasks

In 1996, there will be opportunities to:

- Upgrade Windows pcs to Windows NT workstations running Pentium Pro processors
- Provide solutions based on rack-mounted Windows NT servers
- Create massive databases on new architectures that can handle multimedia
- Develop and integrate corporate Intranet and Internet applications

In summary, 1995 was an excellent year for client/server vendors. C/S is now the preferred architecture. The Internet revolution has helped standardize corporate network architectures, minimized the need for customized client software and provided new opportunities for business development and creation. The beginning of 1996 has seen slow growth in the PC market, but the server market will accelerate dramatically later in the year.

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Vendor Analysis

This chapter describes the C/S strategies of leading vendors.

A

Andersen Consulting

1. Company Focus

Andersen Consulting, unlike some of its competitors such as EDS and CSC, is run as a partnership. Its geographically distributed partners head different industry and technology practices.

Andersen was one of the first systems integrators to focus on C/S technologies. At year end 1994, Andersen Consulting had 32,000 people, over 27,000 consultants, almost 900 partners, in 152 offices in 47 countries. Its client/server business was \$1.93 billion of \$3.45 billion revenues (56% of the total revenues) in calendar year 1994. Object technology accounted for almost \$80 million in revenues in 1994.

2. Product Strategy

Andersen has a large client base with traditional systems that it is committed to supporting. At the same time, it is aggressively pursuing opportunities using Internet and object-oriented technology. It is particularly interested in expanding its global reach. Andersen is committed to its Foundation CASE tools, but it is also more open to using third-party application development tools than it has been in the past. It is developing a Standard Architecture Framework (SAF) to codify its experience with multiple vendor solutions for client/server applications.

A key strategy is showcased by its Da Vinci Virtual Corporation demonstrations that show products like SAP's R/3, Intel's ProShare videoconferencing and Netscape's Navigator Internet browser being used to

link multinationals as well as SOHO (Small Office/Home Office) environments.

Another high-growth area for Andersen is in telecommunications, where it is moving from support of IS and mainframe activities into more engineering and operations support functions.

3. User Appeal

Andersen positions itself as a “neutral” vendor, not preferring any particular hardware or software platform. Andersen customers gain the flexibility of not being locked into a specific technology supplier. Users choose Andersen because of its experience in identifying and implementing solutions and its focus on business integration.

Andersen may partner with clients to share in the financial rewards of its projects, making the cash-flow impact of major projects attractive. Andersen seeks to change its clients’ business processes to make them more profitable and more valuable to their customers.

Andersen places rigorous discipline on its teams. Diverse groups are linked by Lotus Notes and other systems. Communications, using groupware and videoconferencing, is critical to the company’s ability to leverage expertise across different offices. Andersen has invested in the facilities to support a global infrastructure. Its client/server showcase facility is in Minneapolis.

Andersen has developed services and tools in systems integration, change management, strategic services, business product management, and CASE tools. The company’s C/S migration strategies center around technology, personnel, and process factors.

Andersen approaches C/S migration in terms of business process architecture, the conceptual structure and logical organization of a computer-based system. Andersen is as interested in personnel roles as it is in technology. Migration is conducted in terms of a “selective engineering” process that considers reuse, modification and replacement. Andersen’s FOUNDATION CASE product suite, which covers all phases of the C/S system development cycle, incorporates these selective engineering methodologies. More than 20 FOUNDATION products, including METHOD/1, provide customers with the software development services and methodologies they need to build their own applications within a multiple platform, network and architecture environment. FOUNDATION for Cooperative Processing is being deployed as its client/server design environment.

Andersen has significant SmallTalk expertise and has found it particularly useful in medical applications because it provides cross-platform capabilities. Andersen's main challenge is to find enough qualified project managers and developers for its object-oriented systems.

Andersen's Project Eagle is a major investment in object-oriented technology that enables Andersen to rapidly configure systems. Eagle provides Andersen's platform for software components that can be readily integrated. It is too early to tell whether Eagle technology will be as important to Andersen as FOUNDATION. However, it gives the company early experience in using software components. Even if some parts of Eagle are not the right technology for the future, given the growth of Java and the Internet, it is readily modified. This should give Andersen a lead in component software as markets emerge and it learns from its early component-based systems.

4. Platforms

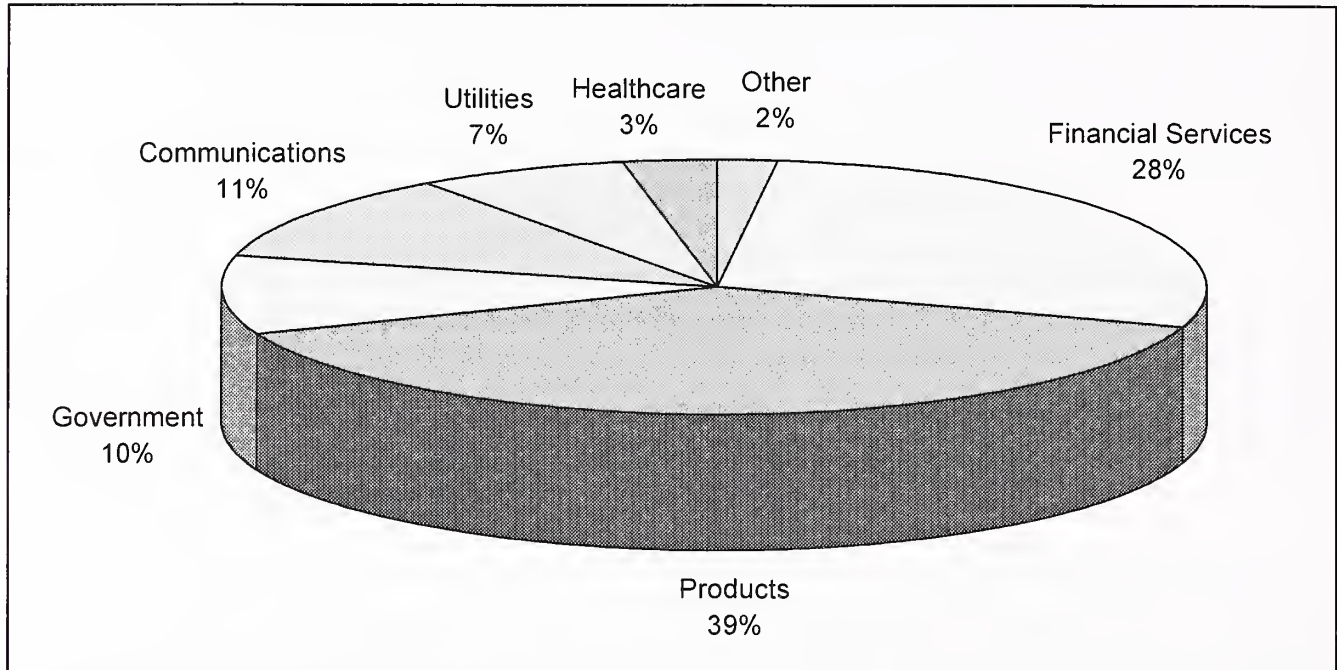
Customers tend to choose Andersen because they have multiple platforms to support and are not loyal to a particular hardware vendor. Andersen's customers rank Macintoshes more highly, for example, than do some other vendors and clients.

INPUT's user survey shows that Andersen accounts are particularly interested in Windows NT. They are much less interested in UNIX, especially AIX or Digital UNIX where the hardware manufacturers IBM and Digital control the accounts. Sun's platforms are of greater importance than IBM's or Digital's to Andersen customers, reflecting Sun's ability to leverage support for its platforms through Andersen. FOUNDATION supports OS/2, Windows 3.1 and NT, HP-UX, OS/2, Solaris, OSF/1, AIX, CICS, and GCOS 8.

5. Markets and Applications

Andersen delivers its services through industry markets. Banking, life insurance and telecommunications are some markets for which Andersen offers prepackaged solutions. Andersen's FOUNDATION Software Organization markets its solutions to all industries, with an emphasis on utilities, financial services, health care and telecommunications businesses, in addition to state and federal government agencies. A breakdown of vertical segments served by Andersen is shown in Exhibit III-1.

Exhibit III-1

Vertical Market Segmentation—Andersen Consulting

Source: INPUT

The consumer products and manufacturing areas are particularly strong for Andersen. Much of its recent growth can be attributed to retailing, financial services, and telecommunications market growth.

Andersen has Industry Centers of Expertise:

- Oil and Gas (Houston, TX)
- High-tech/Electronics (Foster City, CA)
- Process/Chemical (Cincinnati, OH)
- Consumer Packaged Goods (Chicago, IL)
- Automotive (Detroit, MI)
- Utilities (Cincinnati, OH)

In INPUT's user survey, 22 Andersen customers were identified. Of the 20 that gave their organizational affiliation, 16 represented the entire corporation and four represented corporate sites. None represented departmental buyers. Manufacturing was heavily represented, with a low representation of the banking respondents mentioning Andersen as a vendor.

Andersen typically targets major corporations with major applications. Its challenge is to reach down to smaller organizations. It is doing this by supporting the remote offices of telecommuters and subcontractors to larger entities. Client/server budgets were growing on average at 23% in Andersen accounts.

By April 1995, Andersen had more than 750 C/S clients, including Barclays Bank, Caterpillar, Pacific Gas & Electric, and Sprint. The National Marrow Donor Program, Deutsche Bank and Caja Espana are flagship Andersen accounts.

- The National Marrow Donor Program uses STAR (Search Tracking and Registry), a system to track donors. It is one of the most sophisticated biostatistical databases in the world. Andersen claims that search time for donors has been reduced from one week to 24 hours.
- Deutsche Bank—Germany's leading financial institution—worked with Andersen to develop the Trade Finance system, which provides a flexible architecture, integrates workflow and data access, and automates many tasks that previously had to be done manually. The system is being customized for use in Deutsche Bank's New York, Tokyo, and London offices. It has also been packaged for sale to other banks as VISION Trade Finance.
- Caja Espana, a merger of five Spanish banks, used Andersen to integrate the five businesses' computing services and standardize development procedures. The companies developed SIGLO (Systema de Informacion Global), a scalable, long-term computing C/S strategy based on FOUNDATION for Cooperative Processing (FCP).

6. Alliances and Partnering

Through its Business Integration Partnership (BIP) program, Andersen has established business alliances with third-party C/S hardware, software, and specialized service providers, including leading C/S product vendors.

Andersen is the largest SAP systems integrator and consulting firm in the U.S. As of December 1, 1995, Andersen had 2,700 SAP-dedicated people, 267 R/3 projects, 162 R/2 projects and 93 operational sites. Key customers include Florida Power, Northwest Airlines, and the Merced County Human Services Agency.

7. Primary Competitors

Andersen faces more intense competition in the high end of the market. In particular, EDS, SHL Systemhouse, IBM's ISSC, Price Waterhouse, and Computer Sciences Corp. have strengthened their management consulting programs.

In the low end of the market, Andersen's large size and expense restricts its appeal. Smaller niche players include Business Systems Group in Houston; Greenbriar & Russel in Schaumburg, IL; Cambridge Technology Partners in Cambridge MA; and Innovation Information Systems in Norwood, MA.

8. User Satisfaction

In INPUT's survey, Andersen only ranked 3 in user satisfaction. Andersen's customers ranked expensive support, high costs and immature standards higher than average.

9. Expected Announcements and Strategic Direction

Andersen is focusing on business process improvement. It is particularly interested in disintermediation, where distribution channels are shortened and middlefolk, such as insurance agents, are excluded. A challenge for Andersen is how to implement efficient systems without harming distributors and intermediaries. Another challenge that Andersen is aggressively addressing is making the human interface easier to use.

In 1996, expect to see more products and services based on component software and Internet technologies. Expect Andersen to branch out from IS departments to distributed user organizations in global corporations.

B

Borland

1. Company Focus

Borland has refocused on development tools, selling off its Quattro Pro spreadsheet to Novell, which then sold it to Corel. It also licensed Paradox to Novell. As competition for personal databases from Microsoft, Claris and IBM/Lotus intensifies, Borland is looking to enterprise client/server development environments to increase its revenues. Its Visual dBase is facing stiff competition from other PC databases.

2. Product Strategy

Borland markets itself as a leading provider of products and services targeted to software developers. The company is known for its software development tools, which include Delphi Desktop, Delphi Developer, Delphi Client/Server, Borland C++, Visual dBase, Paradox, and InterBase.

Delphi Client/Server, Borland's C/S visual development tool, is part of the Delphi product line targeted at corporate applications programmers. Other Delphi products are for smaller applications and personal use. Borland is finally starting to leverage its InterBase server database as part of its C/S development tools. To augment its C/S products, Borland acquired ReportSmith, a report writer, in 1994.

3. User Appeal

Borland's user interface design is one of its competitive advantages. With its development tools it tries to offer more features for the price than Microsoft.

Borland's success depends on it getting programmers at a grassroots level to use its tools. When these programmers are hired by systems integrators, software developers and user organizations, they often recommend tools they already know. Borland can penetrate organizations by supporting individual programmers.

Delphi combines the Rapid Application Development (RAD) component-based visual design with the power of an optimizing native code compiler and scalable database access. A 32-bit version of Delphi C/S for Windows 95 was launched in March 1996.

4. Platforms

Borland's primary platforms are Windows, Windows NT and Windows 95, with some products that work under UNIX and NetWare. Networks supported by the Visual dBase visual tools and business language are: Novell NetWare 3.11, 3.12, 4.1, and Personal NetWare; Windows for Workgroups 3.11; Banyan VINES 5.0; IBM LAN Server 3.0; Microsoft LAN Manager 2.1; and LANtastic 6.0 Visual dBase 5.5 C/S.

5. Markets and Applications

Borland is focused on building strong relationships with the developer community by providing innovative services and programs to help the development process. Borland is more likely to have customers in small companies than most of the other vendors mentioned in this report.

Borland's customers represent the business and software developer community, including businesses, educational institutions, government bodies, and individual developers.

Borland is gradually establishing its products as corporate standards in some larger accounts, but often these customers turn to Microsoft or Oracle. Microsoft has gained greater publicity for its enterprise marketing efforts than has Borland. Borland's financial instability has shaken the confidence of some users.

6. Alliances and Partnering

Borland's products are supported through comprehensive programs for small and large software developers, corporate developers, value-added resellers and systems integrators. Borland Connections, a set of programs and services created to assist Borland third-party business partners such as consultants, VARs, systems integrators, and training organizations, has more than 1,700 members.

Borland's Delphi has a growing presence in corporate accounts such as American Cyanamid, Standard & Poor's, BMW, Ernst & Young, American Stores, Coopers & Lybrand, J.C. Penney, and the U.S. Marine Corp.

7. Primary Competitors

Borland's primary competitor is Microsoft, followed by Gupta (Centura) and Powersoft. Borland puts out innovative products, but then Microsoft, with greater financial muscle, wrestles some of the market away, as it has done with Visual C++. Microsoft has innovative programs to obtain fees in small increments from developers, through conferences, developer programs, tools, and upgrades.

Borland, by contrast, does not have as large a formal support organization, and competes on price. Recently, in the wake of new financial management, Borland prices have ceased to tumble.

8. User Satisfaction

Borland and Gupta both obtained customer satisfaction ratings of 3.1, compared with 3.6 for Microsoft. Borland customers are attracted to its C/S products in part because these products enable many users to share data. Borland still has a large dBase and Paradox installed base, these databases often being only available to individuals or very small workgroups. With its C/S toolkits, Borland is seeking to migrate these customers to databases like InterBase that can support more users.

9. Expected Announcements and Strategic Direction

Borland hopes to improve business in 1996 as a result of new management and tighter financial controls. Delphi will be a major factor in its ability to increase revenues. Enhancements and add-ons to Delphi Client/Server Suite 2.0, the new 32-bit version of Delphi Client/Server for Windows 95 and NT, can be expected. Visual dBase is expected to be marketed more aggressively in 1996.

Borland announced in November 1995 that it will license Sun's Java programming language and provide development tools based on the language. The product, code-named Latte, will be developed in Java and will radically increase the speed of developing Java applications. Borland will deliver Latte technology in several stages, with the first commercial release scheduled to ship in the first half of 1996. More products to support Internet development will be produced by Borland.

Borland would be an excellent acquisition candidate for a database company like Oracle, which has struggled to penetrate the desktop market. Borland needs a partner that can support its corporate accounts more aggressively.

Borland is well on the path to stemming its losses, but it has not yet managed to regain its market leadership. Its decline in revenues from March 1994 to March 1995 was 35%, whereas from December 1994 to December 1995, it had been reduced to 17%.

Borland has most likely lost leadership forever in the PC compiler market and in the PC database market. Once Borland has regained financial stability, it must aggressively seek out acquisitions that can broaden its product line or create new development tools in-house. It needs to focus on making its products faster to learn than competing offerings. Delphi and Visual dBase will not be enough to sustain a competitive advantage over Microsoft and other C/S tool companies long term.

C

Centura Software (formerly Gupta Corporation)

1. Company Focus

Gupta Corporation recently chose to rename itself Centura Software, based on the name of its new generation of development tools. This reflects a new strategy since founder Umang Gupta was replaced by Sam Inman as CEO in 1995.

Centura provides tools and components for creating high-performance client/server applications that work in complex environments against multiple databases. As one of the first C/S software tool vendors, it has recently made its product line more object-oriented. Centura's software products help IS organizations develop and deploy large-scale client/server applications for integrated but open and decentralized enterprises.

Centura is the product name for its Internet application development tools. The change of company name signifies a new thrust towards Internet-based computing. Centura has a strong Internet support service on its web server.

Centura provides application development tools and deployment components for creating high-performance C/S applications that work in complex environments against multiple databases. Specifically, Centura's software products help IS organizations develop and deploy large-scale C/S applications for integrated but open and decentralized enterprises.

Centura customers usually choose the company's products for the power the application development tools offer, as well as their functionality and ease of use.

2. Product Strategy

Centura's product line includes: SQLWindows, an open C/S development environment; SQLWindows for Microsoft SQL Server, which combines SQLWindows and Microsoft SQL Server; SQLBase Server for NetWare, SQLBase Desktop Server; the Quest products, which provide data access and reporting capabilities; and the SQLNetwork Connectivity products, which let organizations create applications that easily connect to multiple large-scale and desktop databases. SQLWindows and SQLBase account for most of the company's product revenues. However, as a database vendor, the company has never seen the success of Umang Gupta's former employer, Oracle, or its main competitor in the LAN server market, Microsoft.

The Centura product line is designed for upward compatibility with SQL Windows, but is component based. It is positioned against enterprise C/S development tools, such as Forté's products.

- Centura Team Developer - designed to support development teams that want to access multiple data sources
- Centura Ranger - enables data to be replicated across clients and servers, including mobile computers
- Centura Application Server - supports application partitioning across three tiers: a data server, application server and a client PC
- Centura Web Data Publisher - enables application and data servers to be accessible from the Web

3. User Appeal

The company is increasingly targeting higher end environments that require high-performance, multidatabase applications. The company is particularly strong in understanding of the Windows development environment and has leveraged its technical expertise into its Internet product line.

The SQLWindows installed base can upgrade to the Centura product line. Centura offers new features like Web interfaces.

4. Platforms

Centura's product strategy dovetails with many of Microsoft's standards and strategic directions. Centura products facilitate open component development via Microsoft's OLE standard and include built-in support for integrating with C++ and Visual Basic, Microsoft's dominant development languages.

Centura products also integrate tightly with Microsoft's SQL Server 6 and its BackOffice product suite, and they support Windows 3.1, Windows 95, and Windows NT. SQLBase runs only on PC LAN platforms and not on UNIX or mainframe server platforms.

According to INPUT's user survey, companies buying Centura's products are less likely to purchase UNIX server software from IBM, Digital, or SCO. This is because Centura is often used in Windows NT LANs.

5. Markets and Applications

Centura's products are used in most major industries. More than 100,000 developers have licensed Centura's SQLWindows application development system.

More than one million users have deployed the company's SQLBase database management system. Clients include UPS, United Airlines, Allstate Insurance, Citibank, Toyota, Singapore Airlines, Siemens-Nixdorf, Daimler-Benz, and the Ford Motor Company.

Ford has adopted Centura's C/S software development tools to develop and deploy a system that tracks worldwide warranty information, while NASA and Rockwell International use a document-based workflow system to streamline communication, simplify document revisions, and reduce the need to fax or mail documents for the Space Shuttle program.

6. Alliances and Partnering

Centura's most important strategic alliances are with Microsoft, Novell, Computer Associates, and Sun Microsystems. The company is also working with Sun to develop and market SQLWindows for Solaris.

In December, Centura announced a marketing and development relationship with Open Environment Corp. that includes plans for joint products as part of the Centura Internet-based product line.

Through Centura's channel development program, the company works with more than 1,000 partner companies that develop Centura-based software, provide consulting and training, or resell Centura products as OEMs. More than 100,000 developers have licensed Centura's SQLWindows application development system.

7. Primary Competitors

Sybase's PowerBuilder is Centura's closest C/S application development tool competitor. In practice, Microsoft Excel is an indirect competitor that is used to extract data from ODBC-compatible servers. As Windows NT increases in market penetration, Centura has the opportunity to revive as a C/S tool vendor. Whether it will be able to regain its early lead is unclear, as there is strong competition from Internet development tool companies and database vendors, particularly Sybase, Borland, Microsoft, Oracle and Informix.

In certain Intranet systems, Centura competes with Netscape and Java, particularly in document-related applications. Another source of competition

will be tools based on OpenDoc. On the one hand, because Centura supports OLE and Microsoft messaging standards, there may be interoperability with Internet and OpenDoc development tools. On the other hand, Centura is strongly in the Microsoft camp and may not have the cross-platform capabilities of newer tools.

8. User Satisfaction

Centura's customers usually choose its application development tools (and continue to use them) for their power, as well as their functionality and ease of use. Ease of use is relative to that provided by the Windows SDK development environment, for Centura's products are not as easy to use as some newer tools. Centura ranked low on INPUT's customer satisfaction rating, at 3.1. Centura's customers see the ability to buy packaged software as a C/S advantage. They may use SQLWindows to build low-priced applications on LAN servers or Windows desktops.

Client/server budgets in Centura and Borland accounts are some of the slowest growing—on average, 13%. It may be that respondents are already heavily invested in C/S tools and development, hence the lower growth rates.

Centura's customers include Ford Motor Company, NASA, the British Army, Ontario Hydro, and Mobil Oil.

9. Strategic Direction

In 1996, Centura will promote the Centura product line, which is evolving from SQLWindows, SQLBase, Quest, and SQLNetwork to enable developers to Internet-enable applications. It includes tools for modeling, building, assembling, managing, and compiling components. The Centura architecture accommodates a wide range of both SQL and non-SQL data sources and allows easy access to application services on a variety of platforms. Features of Centura are: 32-bit architecture, heterogeneous data replication, object-oriented programming, improved performance, integration with Internet information sources, and integration of multiple data sources.

Centura supports distributed transaction processing using BEA Systems' Tuxedo transaction manager. Centura is positioning itself as an enterprise vendor that understands back-office transaction processing applications. Its Centura component-based tools enable rapid integration of legacy code into flexible applications.

Another strong area for Centura is mobile computing. The company refers to its technology as FLTP (Front Line Transaction Processing). It is

particularly interested in integrating notebook computers and hand-held devices with databases.

Centura's new management team will prove whether or not it is agile enough to capture market share in Intranet and Internet development environments in 1996. An acquisition attempt by Oracle failed in 1995. In 1996 Centura may once again be targeted for acquisition. This is a risky year for Centura; it may already be too late to recover from the impact of Internet tools.

D

Compaq Computer Corporation

1. Company Focus

Founded in 1982, Compaq is the world's largest supplier of Intel-based PCs, offering desktop PCs, portable PCs, peripherals, and servers. It differentiates itself from its competitors with a focus on price/performance.

2. Product Strategy

Compaq is focusing on scalable computers, with the high end being rack-mountable, multiprocessor Intel-based servers. Compaq focuses on ease of administration and setup. It has aligned itself closely with Microsoft, which uses its servers. The open question about Compaq is, "How far into the enterprise server market will it venture ultimately?"

3. User Appeal

Compaq's ProLiant 4500 servers, introduced in October 1995, are Compaq's highest performance, most tightly integrated servers, with an extensive array of fault prevention, fault tolerance and rapid recovery features. The 120 MHz Pentium Compaq ProSignia 500 servers, which deliver breakthrough price/performance for NetWare servers, were introduced in June 1995. Compaq differentiates itself with systems management tools. It also concentrates more on direct sales to corporate accounts than do some of its PC vendor competitors like Dell.

4. Platforms

Compaq seeks to install and/or integrate operating systems, databases, and other key C/S software on Compaq systems, in contrast to smaller PC-clone manufacturers. Strategic platforms include Windows NT, UNIX, NetWare, and Oracle. Compaq customers feel strongly that Digital UNIX is an important server platform, according to INPUT's survey. If Digital leverages

this installed base into Windows NT sales, Digital will stunt Compaq's growth at the high end. Hence Compaq has an alliance with Sequent to supply low-end machines.

The success of Compaq with multiprocessor servers means that midrange server vendors like Netframe and Tricord have had slower than expected growth in 1995. Pressure on high-end PC vendors from Compaq is likely to increase over the next few years.

5. Markets and Applications

Compaq manufactures the ProLiant and ProSignia server families, as well as the SmartStart integration tools for installing and integrating servers, and Compaq Insight Manager, a server management application. Compaq's server and rack-mounted systems business grew from \$1.8 billion to \$3.2 billion at 75% from 1994 to 1995. This is why, to maintain its growth, Compaq must increasingly emphasize servers and networking.

Compaq products are sold and supported in more than 100 countries through a direct-sales system and a network of more than 38,000 Compaq marketing partners. In 1995, 45% of Compaq's revenues came from desktop PCs, compared with 58% in 1994. This reflects virtually no growth, from \$6.3 billion to \$6.6 billion, in its desktop PC business from 1994 to 1995. In the same period, its notebook computer business declined from \$2.7 billion to \$2.5 billion, reflecting heavy price competition.

6. Alliances and Partnering

Compaq's key partners include Microsoft, Intel and Tandem. Compaq is working with Oracle to integrate Oracle's Battlestar suite of system management tools.

Compaq also has a new strategic alliance with Digital's Multivendor Customer Services to provide Compaq with global service and support. As Digital and Compaq face off over clustered hardware solutions, this relationship will become less stable long term.

7. Primary Competitors

Compaq's main C/S competitors are IBM, HP and Digital for corporate applications. In the workgroup and LAN server computing market, Dell, Tricord and Netframe are competitors. Tricord has decided to focus exclusively on high-end, scalable enterprise servers, an area that Compaq may have difficulty reaching for the next few years. Long term, Compaq will

gain more multiprocessor expertise, adopt more powerful processors and compete in that space.

8. User Satisfaction

Compaq had a relatively high satisfaction rating of 3.7, ranking second among U.S. hardware vendors behind HP. In general, customers are satisfied with companies like Compaq that sell a well-defined product, compared with a custom-designed system that may not turn out as well as expected. Readers of *PC Magazine*, *PC World* and *Netware Solutions* magazines consistently award Compaq top honors for service and support.

9. Expected Announcements and Strategic Direction

In the fourth quarter of 1995, Compaq acquired NetWorth, a supplier of fast ethernet hubs and switches. It also acquired Thomas-Conrad Corporation, a maker of network interface cards and hubs. Through its new Internetworking Products Group (IPG), Compaq is developing an internetworking business strategy to provide customers with a complete line of integrated clients, servers, network interface cards, routers, hubs, and network management. Compaq is working to integrate its Insight Manager server management software with network management applications such as Novell's Network Management Software and Microsoft's Systems Management Server.

Compaq is a member of the I₂O (Intelligent Input/Output) group, along with HP, Intel, Microsoft, Novell, Tricord, and several others, including peripheral manufacturers that is chartered with producing distributed machines with high-performance I/O to take on the mainframe market. Machines that support the I₂O specifications will be available later in 1996. Servers that can easily be clustered and networked will be Compaq's contribution to C/S systems.

Compaq can be expected to expand at the high end, adding performance, processors and capacity. It will also address the wireless and handheld markets. It will continue to differentiate itself with software for managing its systems in C/S environments, such as system administration tools.

Expect to see more acquisitions, particularly related to communications and consumer products.

E

Computer Associates International

1. Company Focus

Computer Associates develops, licenses and supports mission-critical business software, including integrated systems and relational database management, application development, and manufacturing and financial applications.

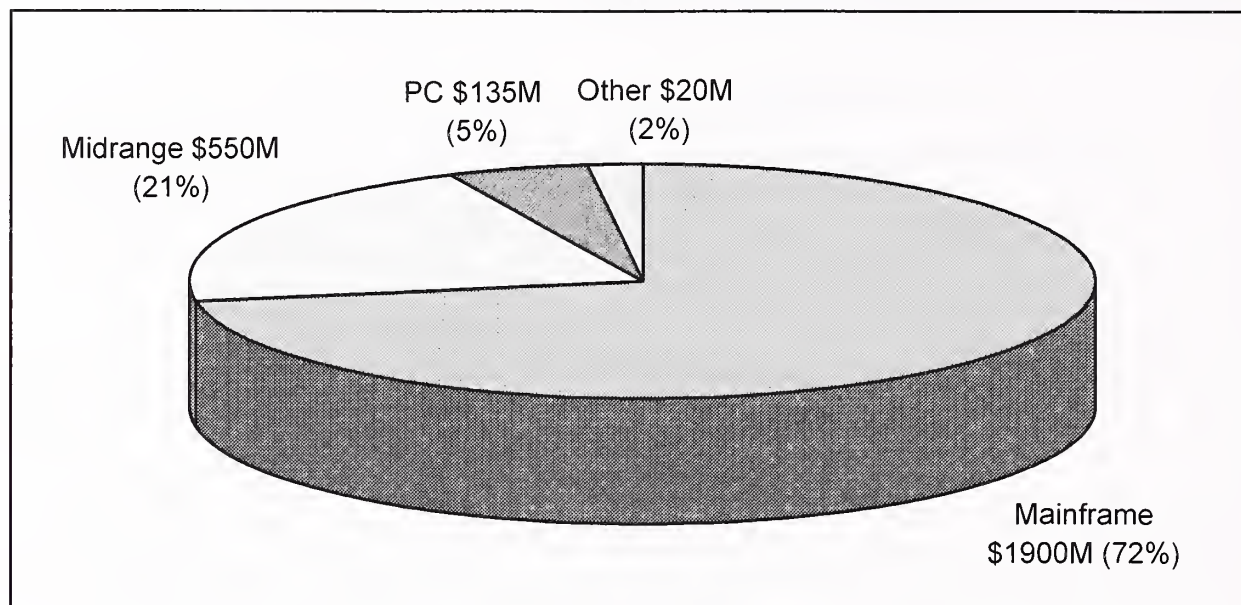
Computer Associates (CA) continues its systems management software focus, but also offers a broad range of applications and database offerings. In systems management it is moving into Windows NT and UNIX platforms aggressively. Its CA-Manman/X and CA-PRMS manufacturing applications, financial software and CA-HRISMA human resources management software provide CA with the opportunity to compete with SAP long term.

CA grows by acquisition and since summer 1995 it has worked hard to integrate LEGENT into its operations. CA's philosophy toward acquisitions, unlike Sybase's, is to integrate acquired companies quickly into its culture and operations. Employees of acquired companies either fall in line with CA or leave quickly. Expect to see more acquisitions from CA in 1995 as it pushes itself more into Oracle's and Microsoft's markets.

Once known primarily as a developer of software for IBM mainframes, CA now develops, licenses and supports cross-platform mission-critical business software, including more than 500 systems and database management products, application development tools, and manufacturing and financial applications. It differentiates itself from its competitors with its breadth of integrated C/S solutions and its multivendor, multiplatform interoperability.

CA's revenues come mainly from software licensing and maintenance. Less than 5% is derived from professional services. Exhibit II-2 shows how CA's fiscal 1995 revenues (fiscal year end 3/31/95) broke down by platform. PC revenue is not a significant part of CA's business, despite offering a spreadsheet, graphics and financial software. CA is focused on the enterprise. In the exhibit below, CA equates midrange with C/S revenue. CA still has an extraordinarily high percentage of revenue from legacy systems. License revenue growth was exceptionally strong in 1995, but maintenance revenue was essentially flat.

Exhibit III-2

CA Revenues by Platform for Fiscal 1995*Source: INPUT***2. Product Strategy**

CA has more than 300 integrated products that address systems and database management, application development, financial and manufacturing applications, and consumer solutions.

CA-Unicenter is CA's flagship product for systems management. CA-Unicenter has seen success on UNIX platforms and is moving strongly into Windows NT systems management. CA-Unicenter/ICE is designed to manage corporate Internet access and Intranets. The product's modules are a combination of a Netscape Web server and some systems management software. This product line propels CA into electronic commerce. CA-Unicenter/TNG (The Next Generation) was developed with UB-Networks, a Tandem subsidiary, and uses virtual reality and 3-D animation to show views of business processes.

CA-OpenIngres/ICE is CA's answer to Illustra or Oracle 8 and is designed to embed HTML documents in a relational database. CA, like Informix and Oracle, sees its value as being able to manage complex Web sites using database technology.

Underlying CA's solutions is an architecture, CA-90s. This will evolve into a messaging layer that links a broad range of applications and systems software. LEGENT's Agentworks software is crucial to CA's ability to compete. It provides a platform upon which intelligent networking and systems management software can be deployed.

CA's focus is on the enterprise. It sells single users PC packaged software, but has had less success in gaining presence in indirect distribution channels than some of its competitors.

3. User Appeal

CA has won deals because it has been able to offer its customers attractive terms. In some cases these may be deferred payments, reflected in increased accounts receivable in CA's financial statements.

CA has managed, by acquisition, to show steady growth and profitability. It is an exceptionally well-managed company. Its ability to assimilate employees from acquired companies into its corporate culture gives it an advantage. In the case of its ASK acquisition, Ingres engineers did not fit the CA environment, resulting in a mass exodus. However, CA has recovered from this setback to position CA-Ingres as a leading midrange database vendor.

CA has absorbed several mature databases into its product line that it still maintains, notably CA-OpenIngres, CA-IDMS and CA-Datcom/DB. This range of technology, matched only by IBM, puts CA in a strong position to provide tools that manage legacy database systems. CA's Impact/2000 software tool helps organizations determine the impact and cost of converting applications for the year 2000.

CA-Unicenter is gaining wide acceptance as a leading systems administration tool for companies that want central control.

CA values training as part of its sales strategy. It holds CEO and CIO bootcamps to educate customers by giving them hands-on experience with laptop PCs and technology demonstrations.

Agent technology is most heavily used in systems management software. CA's experience with this technology positions it well to apply agent technology to other areas.

4. Platforms

Traditionally working in the mainframe arena, CA has made a successful transition in systems management to UNIX and Windows NT platforms. It remains to be seen if CA can be a strong player in the Windows NT market. PC market products tend to be either client software for mainframe products or single-user products. Some of CA's systems management software for Windows NT is licensed from ICL.

5. Markets and Applications

CA's installed base includes almost 100% of the Fortune 500 companies. CA's main market is the corporate data center. With CA-Unicenter and other midrange products like CA-Manman/X, it is broadening its reach into departmental computing.

6. Alliances and Partnering

CA has traditionally not been strong in partnering, but that is changing rapidly. CA and Fujitsu have allied themselves to develop, market, and support object technology. Their product is Jasmine, a multimedia database for the Web. This will be the foundation for a series of products that will compete with Informix/Illustra. New products from the partnership will be delivered as extensions to the CA-OpenIngres product line.

CA and Microsoft offer an integrated product that includes CA-Unicenter and Microsoft Windows NT Server, Systems Management Server, and either SQL Server 6.0 or CA-OpenIngres.

CA also has alliances and partnerships with D&B Software, Netscape, Mosaic, EDS, Sun, Texas Instruments, HP, and BMC Software. It partnered with BMC to include BMC's Patrol product in CA-Unicenter.

7. Primary Competitors

CA's competitors include IBM, SAP, and Sterling Software. See INPUT's report *Client/Server Systems Management Software* for more details.

8. User Satisfaction

CA views service and support as crucial to building long-lasting client relationships; the company's growth has been accomplished through state-of-the-art software and the best possible service and support.

CA had the lowest satisfaction rating of the systems software vendors, at 2.8. This may be because users expect less maintenance and more packaged solutions from CA.

9. Expected Announcements and Strategic Direction

CA hopes to use its experience in enterprise management and database technology to develop management solutions enabling commercial computing on the Internet. CA and Microsoft announced in December that they will work together to Internet-enable their joint product by adding components from CA-Unicenter/ICE and Microsoft Internet Information Server. The

companies will provide the network, systems and information management required to build and deploy robust Web servers on the Internet and private corporate Internets ("Intranets"). The product will be manufactured by Microsoft and marketed by CA through its direct sales force and reseller partners.

An upgraded version of CA-Unicenter, CA's market-leading network and systems management solution, is expected in mid-1996. CA can be expected to produce product lines that combine LEGENT's agent technology with CA-Unicenter software.

CA is heading into a battle with Oracle and Microsoft for the enterprise, as discussed in Chapter V. Its growth rate, despite acquisitions, is too slow. It needs to roll out products faster and gain wider distribution to broaden its presence in the midsized and SOHO markets.

F

Data General

1. Company Focus

Data General (DG) is focusing on servers for niche markets and storage solutions. It is desperately trying to make its systems more standard. This will bring it into competition with vendors such as Compaq, so to remain competitive it is investing heavily in integration of standard hardware components. Since its founding in 1968, DG has delivered more than 400,000 computer systems in more than 70 countries.

2. Product Strategy

DG's first attempt to move from being a proprietary minicomputer vendor to being an open systems vendor foundered because for its AViiON line it picked Motorola's 88000 processor, which proved to gain market share with other hardware vendors. Consequently, DG is now making another attempt to leave its proprietary world by embracing Intel's architecture to make multiprocessor servers.

DG seeks to regain its technology momentum by focusing on enterprise storage solutions. Its CLARiiON line of storage systems represented 43% of revenues in the fourth quarter of calendar 1995. To support its storage and distributed computing solutions, DG is also focusing on systems management software.

DG offers various installation, repair service and customer support plans, and its Systems Integration Business Unit provides systems design, development and consulting services. The Special Systems Group designs custom hardware, and systems and software training are provided at company facilities or customer sites.

3. User Appeal

DG specializes in providing high-end commercial computing products—specifically, servers, storage systems and services to information systems users worldwide. The company's products and services include database servers; communications and networking servers; workstations; desktop and portable systems; mass storage subsystems based on open computing technology; thousands of application solutions offered in conjunction with various third-party firms; and a worldwide service and support network.

4. Platforms

DG products work under a variety of operating systems, including DG/UX, MS-DOS, AOS/VS and AOS/VS II, DG/Universe, and RDOS Languages—C, Common LISP, ADA, PASCAL, COBOL, FORTRAN, BASIC, PL/I, APL, and RPGII Data Management. Networking products support TCP/IP, SNA, DAL, and NetWare.

5. Markets and Applications

DG provides complete services in designing, implementing, and supporting commercial computing environments. These include systems integration, professional services, technical services and maintenance.

DG sells the following systems products: the AViiON family of midrange UNIX-based RISC systems, servers, and workstations; the CLARiiON disk array and tape array mass storage subsystems, which support UNIX-based servers; the 32-bit ECLIPSE MV family of general-purpose systems; and DASHER, ViiSION, and notebook PC systems that run on the DOS, Windows, and Windows NT operating systems.

The company also offers more than 6,000 applications on DG/UX (DG's own operating system) for the AViiON platform, including Pick and multidimensional RDBMS; CEO (office automation), CEO Object Office, and thousands of applications for ECLIPSE systems.

6. Alliances and Partnering

DG has more than 1,000 software and solutions business partners, including software developers, system component suppliers, PC vendors, and communications equipment manufacturers. Specific partnerships include the following companies: Computer Associates International, Datalogix International, Inc., Dun & Bradstreet, Informix, Oracle, Sybase, and SAP.

7. Primary Competitors

DG's primary competitors are IBM, Digital, HP, and Sun. It competes with storage vendors like StorageTek and Epoch. It also competes in storage systems with computer systems vendors like HP.

8. User Satisfaction

The AViiON line of UNIX servers has been rated number one in user satisfaction for three years in a row, according to a *Computerworld* poll of RISC users at DG, IBM, HP, Digital, and Sun Microsystems.

9. Expected Announcements and Strategic Direction

DG has completed its financial turnaround by focusing on niches and storage solutions. It can be expected to challenge established enterprise storage systems vendors like StorageTek, as well as HP. The storage systems market can be expected to grow, positioning DG well for the future.

DG's Pentium Pro-based AViiON servers, to be introduced in 1996, offer a broad performance range, from powerful eight-processor enterprise servers to inexpensive, entry-level servers for VAR and workgroup applications.

DG is a strong proponent of Intel's SHV (Standard High Volume) server architecture, which promises to do for enterprise computing what Intel has done for the desktop by challenging the mainframe market. With its early experience in integrating multiple Intel processor boards, DG is positioned to be a technology leader in this market. It is not clear that it has the financial muscle to become the market leader, however, other better-financed companies like HP or Compaq could dominate it. DG needs stronger relationships with systems integration firms and value-added resellers to succeed.

By focusing on the Intel platform, DG overcomes the shortage of software that plagued its proprietary platforms. However, it needs to continue to court software developers to ensure that their solutions are tuned for DG's architecture.

DG and Dolphin Interconnect Solutions are developing standard interconnect technology, which will be available in the second half of 1996, based on ANSI's Scalable Coherent Interface (SCI) architecture and Cache Coherent Non-Uniform Memory Access (ccNUMA) system architecture. This will enable hundreds of Intel processors to share memory.

G

Dell

1. Company Focus

Dell focuses solely on Intel-compatible PCs. It supports several operating systems, but is highly dependent on Microsoft. Dell markets itself as the world leader in direct marketing of computer systems, as well as one of the largest PC manufacturers in the world.

Dell has a higher proportion of its business (70% compared with 50%) in the U.S. than Compaq. Dell is more dependent on the desktop market than Compaq. From fiscal 1994, ending January 31, 1995, to fiscal 1995, Dell saw its revenues grow 21% from \$2.9 billion to \$3.5 billion. In that time sales to large businesses and VARs grew from \$1.8 billion to \$2.3 billion at 26%. Medium/small business and individual sales only grew 12% from \$1 billion to \$1.2 billion confirming Dell's emphasis on high-end accounts that is reflected in INPUT's survey.

2. Product Strategy

Dell competes on price/performance. It was one of the first mass-market PC vendors to offer Pentium Pro systems. It designs and customizes products and services to user requirements and offers an extensive selection of peripherals and software through the DellWare program.

Dell manufactures and distributes a complete range of high-performance computer systems. These include Latitude and Latitude XP notebook computers; Dimension and OptiPlex desktop computers; DellWare software and peripheral products; and PowerEdge network servers.

Servers range from entry-level file and print servers to scalable multiprocessing application servers. The PowerEdge XL multiprocessing server, announced in October 1995, is the company's most powerful server product, with as many as four Pentium processors and advanced server management features.

3. User Appeal

Dell prides itself on supporting not just its own hardware, but also PC applications that its customers may be running. Its goal is to provide good service and compete on price/performance.

Dell has several avenues into its technical support department: the Internet, a bulletin board, CompuServe, phone, and electronic mail. It can support applications on PCs as well as its own hardware and help customers resolve systems problems.

Direct selling from advertisements characterizes Dell's sales strategy. The ease with which products can be ordered and the clear listing of features in its advertisements help make Dell successful.

4. Platforms

Dell primarily supports Windows, but also offers UNIX. Its systems are often found in accounts that rate UNIX from major manufacturers like IBM, HP and Sun highly at 4 or 5. It is also found in AS/400 and Novell NetWare accounts.

5. Markets and Applications

Dell's customers range from large corporate accounts, government agencies and educational institutions to small businesses and individuals. Customer are located in more than 125 countries. Approximately half the company's revenues are derived from large commercial accounts. Many customers will support a range of PCs from Compaq and HP as well as from Dell.

From the survey, Dell's most satisfied customers tend to be in financial services, education or business services. Some of the least satisfied users were in telecommunications and manufacturing. These users preferred more powerful platforms.

6. Alliances and Partnering

In March 1995, Dell and 3Com announced a comprehensive strategic alliance through which they will integrate 3Com's networking products with Dell's computer products to provide networked system solutions to Dell's customers in North America, Europe and the Far East.

In September 1995, Dell announced a partnership through which Dell will offer Novell's NetWare 4.1 SMP symmetrical multiprocessing solution on its PowerEdge servers.

In October 1995, Dell announced that it is offering Microsoft's Office applications software suite factory-installed on its entire line of desktop and portable PCs.

Digital provides some on-site customer services for PowerEdge XL customers as part of an agreement with Dell.

7. Primary Competitors

Dell competes with Gateway 2000, Compaq, HP, and sometimes Sun. Dell differentiates itself by providing excellent price/performance. Dell also tries to announce systems with slightly faster I/O and slightly faster processors ahead of its competitors, where possible. Its time-to-market advantage may be measured in weeks, hence is not sustainable in the long term.

8. User Satisfaction

Dell uses a "direct relationship" customer service model that allows customers to speak directly to an account team, including an account executive, sales representative, server sales consultant, technical sales representative, and systems engineer to communicate networking and server configuration needs.

The telephone queues can be long and integration between sales and technical support is not yet as seamless as it needs to be. The company has earned many awards for product quality, performance and customer satisfaction.

9. Expected Announcements and Strategic Direction

Dell will continue to renew emphasis on direct distribution of products, with strong service and support. Pentium Pro workstation-class machines with multimedia features will become Dell's mainstream business over the next two years.

Dell is vulnerable to larger competitors, as its initial failure with notebook computers illustrated. It still needs to create customer loyalty. PC users are fickle and can easily switch systems to a competing brand. Dell's strategy to bundle Microsoft Office and other packages makes it more of a turnkey systems supplier than some of its competitors.

H

Digital Equipment Corporation**1. Company Focus**

Digital makes Intel-based and Alpha-based servers, as well as storage, software and network products and services. Its dual platform strategy, matched only by HP and IBM, enables it to sell a complete line of computers for an enterprise.

The company, started in 1957, is also known for its longevity. There is a considerable VAX legacy installed base that is transitioning to Alpha servers. More than 150,000 Alpha systems had been sold by year end 1995. Over 7,000 applications are available from Digital and third parties for the Alpha platform.

In fiscal year 1995, ending June 30, 1995, product revenues were 55% of total revenues, up from 54% in 1994 and 53% in 1993. VAX sales represented 10% of 1995 product revenues, down from 19% in 1994. Alpha-based computers represented 22% of product revenues, up from 13% in 1994. Intel-based PCs accounted for 26% of 1995 product revenues, up from 19% in 1994. A relatively high percentage (65%) of revenues came from overseas in fiscal 1995. Digital's service revenues have higher margins than the product business, but these are declining as lower margin multivendor support revenues replace highly profitable VAX maintenance revenues.

2. Product Strategy

Digital invested heavily in manufacturing its own Alpha processors. After a somewhat slow transition to the Alpha platform from its proprietary lines, it is now gathering momentum. The AlphaServer family uses 64-bit RISC architecture and is marketed as offering a low-cost, open-environment server solution. The new Prioris servers, based on 133-Mhz Pentium processors, targets the corporate departmental level.

Through the ClientWORKS family of client management and networking tools and the ServerWORKS server management software, Digital offers workgroup and desktop management at no additional charge, as well as scalability through integration with enterprise management applications. ClientWORKS and ServerWORKS Manager combine to offer a management solution that includes the best features of both the Simple Network Management Protocol (SNMP) and the Desktop Management Interface (DMI), providing fault and asset management in one solution from a single vendor.

Digital's Internet strategy leverages its investment in messaging research that goes back to its pioneering All-in-One office systems in the 1980s. Building on its experience with security, integration with mainframes and distributed systems support, Digital is rapidly addressing corporate Intranets.

3. User Appeal

The Alpha platform enables Digital to offer higher performance than HP or Sun for many applications, particularly large databases.

The AlphaServer family uses Digital's 64-bit RISC architecture and is marketed as offering users high performance and access to large databases. Digital was early in entering the 64-bit processor market and this has given it a competitive edge for users wanting scalable servers. Its closest competitor in the 64-bit market is Silicon Graphics, which is aggressively marketing its Challenge servers against Digital as Internet and large database servers.

4. Platforms

Digital's primary platforms are Windows NT, UNIX and NetWare.

Digital's new Prioris dual processor and multiprocessor PC servers support most major operating environments, including Novell NetWare 3, NetWare 4, NetWare 4.1 SMP and Novell UnixWare; Windows NT Server 3.5, SCO Enterprise; IBM OS/2 SMP; Banyan VINES; and Digital PATHWORKS.

5. Markets and Applications

Digital's primary markets are financial services, telecommunications, and manufacturing. Specific clients include Computer and Alabama Power.

In September 1995, Digital announced a strategy focusing on four business areas: C/S services, connectivity software, systems platforms, and components.

Digital's Multivendor Customer Service division accounts for approximately 45% of the company's revenues.

6. Alliances and Partnering

Digital's partners and associations include Intel, Microsoft, DMTF Industry Wide Task Force, Avnet/Halmark Computers, Pioneer-Standard Electronic, CommerceNet, Corporate Allication Partners, and DigitalUS.

In August 1995, Digital and Microsoft announced a strategic alliance to meet customer demand for Microsoft-based solutions and support in enterprise-wide computing. The alliance ensures that Microsoft BackOffice and other server software is released for Alpha and Intel platforms simultaneously. The alliance combines Microsoft client/server products with Digital's leadership in enterprise systems, service, support and systems integration.

In October, Digital and Innovative Systems Inc. announced a partnership to develop the AlphaWarehouse data warehouse for Digital's Alpha Server.

7. Primary Competitors

HP, Sun, and IBM are Digital's main competitors in platforms. Digital users are particularly interested in Windows NT on both clients and servers. Digital needs to leverage its Windows NT and connectivity expertise to differentiate itself.

8. User Satisfaction

Users select Digital servers for performance, reliability, scalability, and support. In INPUT's survey, Digital only scored an average satisfaction rating of 3. The three respondents who rated Digital 5 were all from non-commercial market segments. Dissatisfied customers included a high proportion of retailers.

9. Expected Announcements and Strategic Direction

Digital's historical strength is connectivity; the company is looking to its expertise in this area for future growth. The company is focusing on three growth areas: high-performance enterprise applications on UNIX; Windows NT across the enterprise; and connectivity within and across the enterprise.

Digital introduced its new "Super Spider" software in December 1995, as part of what is intended to be the fastest, most advanced information search and indexing technology for the World Wide Web. The software is currently being used at its Alta Vista information retrieval Web site (<http://www.digital.altavista.com>). Digital's 64-bit architecture gives it a performance advantage over 32-bit search engines.

Digital is intent on owning the user. As it expands its Windows NT offerings it risks alienating companies like Dell and Compaq, for which it provides services. Digital's brief attempt to sell retail Centris computers is seen as defocusing the company and a low-margin business. Digital is expected to compete successfully in the high-end Windows NT server market.

Alpha is one of the reasons Digital is a credible server vendor, but it could also be its Achilles heel. Digital's expertise not only in microprocessor design, but also in manufacturing has helped turn the company around. However, Digital has to be careful because HP, Intel and Microsoft are working on the next generation of processors, and the Alpha platform may become too expensive to support. It has tried unsuccessfully to increase penetration of the Alpha market via such companies as Olivetti. When Digital has to build its next fab will it be able to afford it? Its Hudson, MA fab, coming into full production in 1996, is a \$450 million facility designed to produce three generations of semiconductors. To continue to afford such a facility, Digital has to make its Alpha machine phenomenally successful. It may be able to do this if it manages to persuade its services customers to migrate up from PC platforms to Alpha workstations and servers. Getting them to accept Windows NT, which Digital is successfully doing, is one step in this direction.

Expect to see more networking software products from Digital for Internet security, systems management and connectivity. Currently, Digital's service business is run at arm's length from its product business. Long term, as a PC vendor, Digital has the potential to adversely affect the revenues of PC vendors like Compaq and Dell that it currently supports.

I

Dun & Bradstreet Software

1. Company Focus

D&B Software first introduced *SmartStream*, its C/S applications software product line, in 1992. More than 400 customers have installed over 3,600 *SmartStream* applications worldwide. In 1995, D&B Software's C/S software business exceeded \$100 million.

Its revenues declined from \$476 million in 1993 to \$406 million in 1994, but have started to rise based on acceptance of *SmartStream* and revenues from Pilot's Lightship OLAP (Online Analytical Processing) software. In 1994, 64% of revenues came from maintenance and 21% from professional services. Erisco, an acquisition, offers software for the health services market.

2. Product Strategy

SmartStream DE (Distributed Enterprise), launched at year end 1995, is intended for corporations that have multiple sites and branch offices. It is a distributed suite of application modules that can be rapidly reconfigured to support changing business processes. It is component-based software

supporting workflow, reporting, queries, intelligent agents, transaction services, data management and business processes. Data can easily be replicated across an organization.

D&B Software offers tools, including *SmartStream* Path, *SmartStream* Connect and *SmartStream* Builder, to migrate customers from its legacy systems to newer C/S platforms. *SmartStream* Builder is created from Powersoft's PowerBuilder. *SmartStream*'s decision support tools are based on Lightship software from recent acquisition Pilot Software. D&B still has approximately two-thirds of its revenue from traditional mainframe and minicomputer applications. D&B also provides software to help customers address "year 2000" date conversion problems.

3. User Appeal

D&B Software, which provides enterprise business solutions, emphasizes the breadth and depth of its product line, combined with flexibility, experience, expertise and automation capabilities. D&B has a leading workflow-based architecture, compatible with Microsoft's MAPI messaging platform, for its *SmartStream* DE applications. D&B sees workflow and intelligent agents as the key to automating business processes.

Companies that cannot afford SAP will look to D&B for lower cost solutions. D&B has traditionally had many small installations, particularly in geographically dispersed offices. It is now in a position to upgrade its installed base with *SmartStream*.

4. Platforms

SmartStream DE products generally support popular network and server platforms. They are particularly strong in support for overseas environments. D&B is likely to be particularly strong in Windows NT environments, as these target the same customers as do its traditional minicomputer platforms.

5. Markets and Applications

The company's customers represent all major industries and include 75% of the Fortune 500. Customers generally seek one or more of the following: to flexibly blend central control and local autonomy; to dynamically change and improve processes; to "flatten" their organizations so as to broaden decision-making authority; to manage multiple business lines and/or locations; and to extend business processes to additional users, such as suppliers, partners and customers.

D&B Software's products and services are used to build and manage integrated, mission-critical solutions for financial management, human resources, procurement, information management, and manufacturing and distribution.

The company's extensive *SmartStream* Distributed Enterprise C/S series of products and tools is marketed as the first C/S business application software to distribute data, workflow and business processes. In reality, smaller, less comprehensive applications based on Lotus Notes were available before *SmartStream* DE, but not for core enterprise applications.

D&B Software's Expert Series and Millennium Series of mainframe software products are designed for high-volume transaction processing applications.

6. Alliances and Partnering

In addition to its own staff and technologies, D&B Software also relies on strong alliances with third-party value added resellers, systems integrators and consultants, as well as partnerships with other leading hardware and software vendors.

D&B Software's primary business partners are: Sybase, IBM, HP, Sun, Technologic, DG, Digital, EDS, Cognos and Microsoft. Taking the example of SAP's Logo Partners program, DBS has established relationships with accounting firms, such as Arthur Andersen, Price Waterhouse, and Grant Thornton. It resells an enhanced version of Sybase's PowerBuilder as one of its development tools.

Chrysler is one of D&B's largest customers for *SmartStream*.

7. Primary Competitors

DBS ranks fourth in the C/S applications market, after SAP, Oracle, and PeopleSoft. At one time it was the largest applications software company. A major mistake it made was to lose sight of technology and invest too heavily in OS/2. It lost its vitality and energy and is now trying to regain its agility.

8. User Satisfaction

Users are not particularly satisfied with D&B, but under new management there is an opportunity for change. Delays in launching *SmartStream* may have been part of the problem. Now that *SmartStream* is shipping and there is attractive pricing users may become more satisfied.

9. Expected Announcements and Strategic Direction

In 1996, D&B Software is expected to be divested from its parent, Dun & Bradstreet Corporation. This should enhance its ability to compete. D&B Software is particularly strong in midrange applications that need worldwide support. It can be expected to provide more applications for midrange companies.

D&B Software is releasing Year 2000-enabled versions of its Expert Series and Millennium Series software. Year 2000-enabled core applications for financials, human resources and materials management are planned for 1996 and 1997. They will be supplied under maintenance agreements.

Dun & Bradstreet still has to learn how to market its products through indirect channels and how to leverage product licenses like Oracle and Microsoft do.

J

EDS

1. Company Focus

EDS's main focus is on outsourcing and systems integration, other services being management consulting, professional services and process management. It will be spun off as an independent company from its parent, General Motors, in 1996.

It has 47 strategic business units focused on an industry or geographic region. In 1995 it signed \$10 billion worth of new business and revenues rose almost 25% to over \$12 billion.

2. Product Strategy

EDS is primarily an outsourcing company. It is leveraging its TCP/IP network, one of the largest in the world, to support C/S networks remotely. It is also adopting leading C/S products to help customers reengineer their businesses.

3. User Appeal

EDS sets itself apart from its competitors with its view of C/S as a means of helping customers meet business objectives, rather than simply as a technological end. The company's proprietary RightStep approach incorporates four key elements:

- Business strategy (using consulting tools to develop objectives and business processes that are aligned with the organization's overall strategy)
- Technology portfolio (required capabilities are defined against existing resources with the goal of achieving ideal functionality without unnecessary disruptions or losses on previous investments)
- Technology architecture (standards are established for the structure and operation of the information system)
- Transition plan (a detailed plan for migrating to the new environment, including issues like staffing, training, and operating procedures)

The company's specific resources include EDSNET, a worldwide, high-speed telecommunications and data network supported by microwave, fiber-optic and satellite technologies; 18 Information Processing Centers, which operate 24 hours a day around the world; and the Information Management Center in Plano, Texas, which constantly monitors the performance of those networks.

4. Platforms

EDS works with all major C/S platforms in its consulting business. Windows platforms, particularly NT, and Silicon Graphics IRIX systems are rated highly by EDS customers.

5. Markets and Applications

EDS serves more than a million C/S users in more than 40 countries and in all major industries, from communications and insurance to manufacturing and finance. Customers range from small businesses to the world's largest corporations and governments. Specific C/S customers include General Motors, L.A. County, Del Monte, NASA, Apple Computer, Xerox, and the Department of Housing and Urban Development.

EDS provides a full range of services, including management consulting, systems development, systems integration, systems management, and process management.

6. Alliances and Partnering

EDS has more than 800 alliances with hardware and software vendors, including Microsoft, IBM, and HP. EDS is one of SAP's Logo Partners.

EDS and Silicon Graphics have a strategic alliance through which EDS utilizes Silicon Graphics' WebFORCE hardware and software applications to help give its customers a presence on the World Wide Web. EDS also sells data warehousing systems using SGI's Challenge servers.

7. Primary Competitors

The company's primary C/S industry competitors include SHL and IBM's ISSC division. Smaller niche players include Business Systems Group in Houston; Greenbriar & Russel in Schaumburg, IL; Cambridge Technology Partners in Cambridge MA; and Innovation Information Systems in Norwood, MA.

8. User Satisfaction

EDS emphasizes customer satisfaction and business results over creating and selling technology. According to the company, EDS has an unparalleled track record of contract renewals based on a consistently high level of performance. The company conducts user satisfaction studies on a regular basis.

9. Expected Announcements and Strategic Direction

In August 1995, General Motors announced that it intends to pursue a split-off of EDS, through which EDS would become an independent, public company. GM and EDS expect that a split-off could occur in the first half of 1996.

EDS can be expected to build on its TCP/IP network infrastructure to offer Intranet outsourcing. EDS will continue to develop its a comprehensive suite of Internet products, introduced in third-quarter 1995, to establish a presence for its business customers on the World Wide Web. These advanced technologies are designed to provide the capabilities to attract business while supplying new on-line services to existing customers.

K

Fujitsu

1. Company Focus

Fujitsu and its many divisions and affiliates, including ICL, Amdahl and Nokia, make a wide variety of computers and information processing systems, including supercomputers, business servers, workstations, and PCs. The company promotes its solutions business with expertise in computers,

communications, microelectronics, and advanced systems integration techniques.

2. Product Strategy

In May 1995, Fujitsu Limited began worldwide marketing of the new GS8000 series of Global Servers. The new servers, which use CMOS technology and scalable system architecture, maintain complete compatibility with Fujitsu's M-Series mainframe. The company has also introduced new advanced C/S storage products and middleware software.

Fujitsu has three new products that support C/S applications and development: PowerAIM for distributed OLTP, which is based on open standards and supports concurrent batch processing, allowing more flexible simultaneous execution of batch and on-line processing; and the PowerCOBOL85 and PowerGEM Plus, which allow host system application development on Windows systems.

Fujitsu Australia Software Technology (FAST) sells the following C/S products: Dominion Empower for Host Applications, Lotus Notes Application Development Services, STRACT-Partner/Windows, DBINFO, and FAST DataSqueeze. The division's object technology products include GRAPHICSPower, IntelligentPad, and ODB II.

3. User Appeal

Fujitsu has a close relationship with Sun, being a manufacturer of SPARC processors and reseller of Sun systems. Fujitsu can be thought of as Japan's IBM, with heavy emphasis on corporate systems and networks.

Its telecommunications equipment business differentiates Fujitsu from many hardware manufacturers and should give it an advantage in developing its network technologies.

FOSSI considers its advantages to be the backing of Fujitsu, as well as ambitious goals and a wide scope. In groupware, system administration and network management, the company emphasizes its vendor independence. In object-oriented databases, FOSSI is larger than its direct competitors and has had significant experience in applying its technology to telecommunications networks.

Fujitsu is a leader in handheld computers for vertical markets. Fujitsu's Personal Systems division has leading-edge technology for mobile clients, which enables the company to be a leader in supporting non-desk workers with computing power.

4. Platforms

FAST is committed to multiple platform development. FAST's current software development is centered around UNIX, Windows/NT, and Windows 95 platforms. The primary strategic platforms for FOSSI products are Windows and Windows 95; the primary server platforms are NT and UNIX.

5. Markets and Applications

Fujitsu's C/S business targets the overall C/S market. FOSSI's major marketing efforts are groupware, object-oriented tools, on-line services, and system and network management. Each is a relatively new business for Fujitsu in the United States.

6. Alliances and Partnering

In June 1995, Fujitsu announced an alliance with Computer Associates to develop its ODB-2 object-oriented database. This has resulted in CA's Jasmine product, which Fujitsu can also market. This product has the potential to make both CA and Fujitsu leading database vendors for the Internet and multimedia.

Dominion Empower for Host Applications, the result of a joint development project between FAST and Dominion Systems Pty Ltd., transforms host applications into Windows applications.

FAST is a registered Lotus Business Partner for the supply of application development, consulting, and systems integration services. FAST's specialties include integration of Lotus Notes with other C/S systems.

FOSSI's TeamWare groupware product was developed jointly by Fujitsu and its ICL subsidiary. The company's NetWalker network and system management product was developed with Syntax.

Concurrent with its marketing of Windows 95 and of its own PC model pre-installed with Windows 95, Fujitsu has a Windows 95 service program designed to help customers more easily utilize the Windows 95 environment.

7. Primary Competitors

TeamWare competes with Lotus Notes, Novell, Microsoft and Netscape in groupware; ODB-2 competes with object-oriented databases. Sun, HP and IBM are the top competitors in network and system management products. In C/S mainframe servers, Fujitsu competes primarily with IBM and Hitachi Data Systems.

8. User Satisfaction

Fujitsu's customers want better communications, especially with their own customers. Fujitsu is ideally suited to address these needs with its emphasis on communications and peripherals, such as document scanners. Its customer satisfaction rating was low at 2.7, as it was for the other Japanese vendors. Fujitsu needs to put more effort into helping the U.S. market understand its different product lines, in the way that HP has done.

9. Expected Announcements and Strategic Direction

Fujitsu will continue to focus on building improved corporate-wide processing environments in the open C/S computing environment.

The Fujitsu/Computer Associates alliance will introduce object database management technology throughout 1996.

FOSSI will continue to focus its efforts on gaining market share in the U.S. Many of its products were first introduced in 1995 into U.S. markets.

FAST will continue to focus on C/S software development, particularly database and networking tools, object-oriented user interface development tools, application development tools, and multimedia development tools.

L

Hewlett-Packard

1. Company Focus

HP markets itself as the leader in providing platforms, service and support for enterprise C/S computing environments. Founded in 1939, the company is known for its reliable, sturdy equipment and for its experience. HP has strongly promoted open systems to wean customers away from IBM and other proprietary platforms.

HP presents itself in different ways to different market segments. To IS management, HP is both a PC vendor and a server company. For office managers, HP is the printer company. For medical technicians, HP is a diagnostic equipment company. For laboratory staff, HP is an instrumentation company. It is this ability to market its divisions that has enabled HP to show continuous growth. Without the printer division, HP in the early 1990s would have looked as lackluster as its competitors Digital and DG.

2. Product Strategy

HP has two server lines: the HP 9000 series 800 commercial servers and the NetServers. HP introduced three new SMP servers in November 1995: the HP 9000 high-end server, which offers the industry's best performance, and the HP 9000 K210 and K410 midrange servers. Several new storage solutions were announced at the same time.

HP has a Trojan Horse strategy to get into IBM accounts. By supporting IBM's DB2 on its HP-UX platforms HP is able to first integrate with, then replace, IBM mainframes.

3. User Appeal

HP prides itself on its research in HP Labs and on its corporate culture, known as the HP Way. A characteristic of this culture is that HP does not let the lemmings go over the cliff. If a project gains momentum, but looks like being a failure, the HP culture will tend to stop it before it goes too far. This is in contrast to other computer companies with strong R&D, where it can become very hard to kill projects once they have gained momentum.

HP has considerable experience in implementing development platforms for distributed object-oriented environments with Distributed Smalltalk and its SoftBench application development environment.

HP claims to differentiate itself from its competitors in three ways:

- High-quality service and support
- OpenView, the leading network management platform for networked UNIX and Windows C/S environments
- Its ability to provide a full range of both UNIX and Windows platforms

4. Platforms

The HP 9000 family of workstations and technical servers run the HP-UX enterprise-class operating system, as do the HP 9000 series 700 workstations. NetServers, which are Intel-based, run NetWare and Windows NT, as well as most other common server platforms.

5. Markets and Applications

HP has more than 100,000 products, including mainframes, minicomputers, PCs, calculators, laser printers, and scientific and medical equipment.

HP's customers include Fortune 100 companies, such as Chevron, which uses HP hardware exclusively (a \$10 million contract); Owens-Corning Fiberglas Corporation (HP's largest outsourcing contract, at \$50 million); and Mercedes-Benz.

6. Alliances and Partnering

HP works closely with Microsoft on product and service development. In addition, HP is a Microsoft Authorized Support Center. HP, like Digital, is able to offer customers a scalable range of UNIX or Windows NT servers.

HP's other primary software partners in its UNIX and NetServer business are SAP, Oracle, and Sybase. Partners also include Intel, SCO, and Novell.

HP has a strong relationship with SAP for HP NetServers running Windows NT Servers and for HP 9000 servers running HP-UX. Forty-two percent of SAP R/3 licenses run on the HP 9000 platform.

HP is an OEM for Novell's NetWare 4.1 SMP. HP is also a Novell Authorized Support Center. Hitachi and HP collaborate on RISC processor architectures.

7. Primary Competitors

HP's primary C/S industry competitors are IBM and Digital in minicomputers and Compaq in workstations.

8. User Satisfaction

HP was the highest rated vendor with an average of 4 in INPUT's survey. It gained consistently high ratings. A recent *Computerworld* survey of 150 PC server users gave HP's NetServer slightly higher overall ratings than for its main competitors: Compaq's ProLiant and IBM's PC Server. Servers were rated on hardware and software reliability, failure recovery, and service responsiveness.

HP recently was awarded SAP's Award for Excellence for its commitment to customer satisfaction across the entire HP server product line. HP has more than 400 service and support offices in more than 120 countries. HP consciously promotes a quality image.

9. Expected Announcements and Strategic Direction

HP and Intel are jointly developing what is now being called the P7 microprocessor. It is expected to be available in late 1997 or early 1998. If this fails, Intel is expected to produce its own next-generation processor.

HP's primary C/S marketing strategy will continue to be to consolidate its UNIX business and Windows NT business in two distinct lines that offer a full range of products.

M

Hitachi

1. Company Focus

Hitachi is a major industrial concern with heavy industry divisions as well as a strong computer business. This report focuses on the Hitachi venture between Hitachi and EDS, Hitachi Data Systems (HDS), that supports much of the company's U.S. C/S business. Hitachi is also strong in software, with Hitachi Software Engineering seeking to expand its U.S. operations.

2. Product Strategy

HDS markets a wide range of industry-standard mainframes, data storage devices, open systems hardware and software, and consulting services. The company markets itself as offering a combination of technical innovation, advanced engineering, industry-standard interfaces and functionality, scalability, and flexible customer service. The company's focus is providing single-source solutions for LAN/server networking, particularly in C/S configurations.

Hitachi's Skyline mainframe series, which debuted in April 1995, is marketed as the fastest mainframe on the market. Other recently introduced products include the HDS 7700 Disk Array, for DASD storage requirements, and numerous enhancements to the Osiris open operating system suite.

The new HiLANder family of intelligent backup LAN storage systems became available in October 1995. These systems provide transparent data backup, as well as file restoration, resource allocation and automatic archiving. HiLANder is preconfigured for Novell NetWare 4.1 and IPX, and can support IP and AppleTalk. Supported standards also include Novell NetWare Directory Services, Storage Management Services, and Systems Independent Data Format (SIDF).

HDS recently introduced the HDS SR4300 Scalable RISC Complex, which combines multi-CPU performance and the reliability of enterprise-class computer systems with the price/performance of parallel processing RISC architecture. It is intended for use in on-line transaction processing (OLTP), decision support, and data mining.

3. User Appeal

Users often choose Hitachi for its storage or high-quality imaging solutions. In the U.S. market it is not a serious mainframe competitor, its main contribution being in optical and magnetic storage systems.

4. Platforms

The HiLANder products, which became available in October 1995, have an open, scalable architecture. The product line initially supported NetWare servers, MS-DOS, Windows, UNIX, and OS/2. Subsequent development is enhancing the system to include support for Fast Ethernet, Token Ring, FDDI, Macintosh, and Windows NT and 95.

5. Markets and Applications

The company's customers are primarily large systems users at Fortune 200 multinationals that have standardized their operating environments on System/370 and /390 software and are extending their data centers from a mainframe-centered approach to networked, UNIX-based, midrange environments. Customers represent most major industries, including the following: aerospace, energy, banking, insurance, manufacturing, transportation, services, education, and government. Specific customers include: the Swedish Post Office, the State of Wisconsin, American Airlines, Pioneer Hi-Bred International, and Wells Fargo Bank.

6. Alliances and Partnering

HDS has several alliances and partnerships, including one with Sequent for its Symmetry 5000 series. Indirectly, HDS supports partnerships through its parent, Hitachi Ltd. For example, Hitachi and HP collaborate on RISC processor architectures.

7. Primary Competitors

Hitachi's main competitors for PCM and storage products are Amdahl, EMC Corp., Fujitsu, IBM and StorageTek. Some open systems and midrange storage competitors include DG, Digital, HP, IBM, Intel, and Sun.

8. User Satisfaction

Hitachi rated 3, lower than most vendors. Its users complain that C/S systems are expensive to support. Hitachi may benefit from revising its pricing on its storage systems.

According to HDS Market & Competitive Analysis, 37% of the company's customers have bought from HDS every year since commencing business with the company; 38% have bought every other year since commencing business with HDS, and 26% have bought once and not had repeat business with HDS.

9. Expected Announcements and Strategic Direction

In 1996, HDS will develop its parallel operating system to allow compatibility with the AIX UNIX operating system for PowerPC, comply with UNIX industry standards, and make use of Hitachi's parallel control software.

HDS formed a New Business Unit in early 1995. In addition to marketing enterprise-wide open systems hardware and software, it develops integrated solutions for open systems environments in data backup and storage. The first three products are HiLANder, HDS 5700, and HDS 5493.

As part of its agreement with IBM, HDS is developing a line of parallel servers based on IBM's Power RISC technology. This is part of the company's expected focus on more parallel and CMOS systems.

HDS plans to add symmetric multiprocessing (SMP) products, including those based on Intel technology, to its product range.

HDS will continue to enhance its Osiris HI-OSF operating system to support the new S/390 HDS Skyline Series as well as the planned CMOS-based S/390 platform. The company will continue to increase its focus on middleware products in addition to mainframes.

N

IBM

1. Company Focus

The company offers hardware, software and consulting services, including design, implementation, outsourcing, and education. IBM is able to offer more extensive service than its competitors.

Lou Gerstner's crusade to make the company more open is starting to pay off. Software revenues accounted for \$12 billion of IBM's \$72 billion 1995 revenues. They grew at 12%, the same rate as overall company growth. IBM saw a resurgence in mainframe sales in 1995, but this is unlikely to continue as companies migrate their applications to newer platforms. INPUT believes that given the rate at which data accumulates, existing mainframes will expand, but gradually applications will be migrated from them to other platforms. Mainframe software will also become more like that found on LAN servers, easier to maintain, simpler to install and ready to run out of the box.

2. Product Strategy

IBM is the largest software vendor and is rapidly embracing cooperative applications and the Internet. It is basing its software strategy on network-centric computing. Its foundations are its SOM (System Object Model) object-oriented framework that will be freely licensed to developers by CI-Labs.

IBM has launched many database tools in 1995 for its DB2 database environments. Data mining will be a major application for IBM in 1996 as the power of large mainframe databases is harnessed.

IBM offers a full range of services to support its products. Some of its most successful areas have been in mobile computing with the ThinkPad notebook computer, in increasing Lotus Notes sales in 1995 and in integrating the mainframe as a C/S server.

IBM's Global Network, known as Advantis in the U.S., will increasingly tie together trading communities using traditional EDI and the Internet. This enables IBM to support customers more widely than other vendors.

3. User Appeal

IBM's main strength in the C/S area is its installed customer base. It can fully support its customers with services, software and hardware. Its challenge is to ensure that its installed base does not migrate away. For example, DB2 users have chosen Oracle, Sybase or Informix for databases surrounding their IBM software. IBM mainframe users have selected Digital, Sun or HP to augment their servers. IBM needs to be more aggressive in supplying its own solutions for these customers.

IBM markets its solutions globally; its reach and installed base overseas is stronger than many of its competitors'.

IBM's PC Server business offers customers a complete line of PC Servers, from minitowers for independent LANs to superservers for high-end fault-tolerant networks. Each comes with a three-year on-site warranty.

IBM's areas of focus are: application focus, ease of use, interoperability and systems management.

IBM's key C/S business areas are: personal productivity, E-mail, decision support, human resources, payroll, finance, accounting, and customer relationship management.

4. Platforms

IBM seeks to support all major platforms, including those based on Windows, UNIX and its own OS/2, OS/400, AIX and MVS operating environments. However, IBM has failed to cannibalize its own products, making its AIX line less successful than it would have been otherwise.

To ensure that its middleware runs on other leading industry platforms, IBM licenses its middleware, including DB2, CICS, and the MQSeries.

5. Markets and Applications

IBM's Client/Server Advisor System is a Lotus Notes-based database of information on thousands of C/S solutions and references, research information, and a set of tools for using the information.

IBM offers the SystemView suite of systems management software designed for multivendor, multiplatform distributed systems. Recently it acquired Tivoli Systems to increase its market penetration for systems management software in UNIX and Windows NT accounts. See INPUT's report *Client/Server Systems Management Software* for more details.

6. Alliances and Partnering

J.D. Edwards, SSA, SAS Institute and Baan are included in IBM's strategic software partnerships and alliances. IBM also has a relationship with Oracle, and it licenses some of its products to Sun and HP.

IBM offers accounting and human resources solutions through alliances with SAP, PeopleSoft, and Dun & Bradstreet.

IBM recently purchased Lotus, and now emphasizes Lotus's software, particularly Lotus SmartSuite and Lotus Notes. InterNotes is an add-on module to enable Notes databases to be published on the Internet. Lotus Notes has also been added as a user interface to MQSeries middleware. Expect to see more Internet collaborative applications, some based on Lotus Notes.

7. Primary Competitors

In the CMOS mainframe industry, IBM's top competitors are Amdahl, Fujitsu, and Hitachi. In the open systems server market, the main competitors are Compaq, Sun, and HP.

IBM's competitors in the service business include Hewlett-Packard and Digital. Smaller niche players include Business Systems Group in Houston; Greenbriar & Russel in Schaumburg, IL; Cambridge Technology Partners in Cambridge MA; and Innovation Information Systems in Norwood, MA.

8. User Satisfaction

Users are generally pleased with the thoroughness of IBM's service, although they sometimes complain about the length of time it takes IBM to respond to individual service issues.

IBM's Web pages offer an on-line tour of one of IBM's Open Systems Centers, which shows how closely IBM can work with its clients.

9. Expected Announcements and Strategic Direction

IBM's main C/S focus is on interoperability and integrated packaging (matching hardware and software products to clients' C/S applications) and training customers in effective systems management. Other targets for IBM C/S investment in the next two years are: ease of use and installation, personal productivity, E-mail and messaging, decision support, human resources and payroll, finance and accounting, order entry and billing, distribution, customer service, and sales and marketing.

In November, IBM demonstrated a new server that runs the new Pentium Pro processor. These servers should become available in the first half of 1996.

IBM plans to introduce a bundled server software suite for its OS/2 Warp Server in early 1996.

O

Informix Software

1. Company Focus

Informix markets itself as a leading supplier of high-performance, parallel processing database technology for open systems.

Informix products also include application development tools for creating client/server production applications, decision support systems, and adhoc query interfaces, and connectivity software that allows information to be shared transparently from PCs to mainframes within the corporate computing environment.

2. Product Strategy

Informix's database technology delivers a high-performance, parallel processing architecture that provides near linear scalability; flexible, intelligent data partitioning schemes; and mainframe-caliber, dynamic system administration for very large database environments.

The company's next-generation database architecture is called Dynamic Scalable Architecture (DSA). Informix's flagship enterprise relational database management system is INFORMIX-OnLine Dynamic Server (ODS). ODS was created to accommodate very large databases and large numbers of individual users who need immediate responses to complex queries.

OnLine XPS (Extended Parallel Server) is designed to support large database environments for OLTP. It has contributed to Informix's >50% growth rate in 1995 and is used for data warehousing, imaging, document management, and workflow database applications.

The company's Enterprise Gateway allows tools and applications running on UNIX and Windows to access data located anywhere in a given enterprise.

3. User Appeal

Informix focuses on performance and reliability. It has traditionally been more conservative in its marketing than Oracle or Sybase. It is able to offer a scalable range of databases from cost-effective multi-user PC systems to enterprise parallel servers.

Informix has worked closely with VARs to customize solutions for vertical markets, such as retail, telecommunications and financial services. Affordable, vertical applications packages are one reason companies choose Informix.

Informix's acquisition of Illustra has propelled it to the forefront of multimedia data storage. Informix is one of the first companies to recognize this market and support it through resellers. Illustra provides Informix with an object-oriented platform that can rapidly be configured to make new data types.

4. Platforms

Traditionally Informix focused heavily on UNIX, but has successfully penetrated the Windows NT and other Windows markets. The company's products are based on ANSI-standard SQL. In INPUT's survey, all the leading UNIX platforms were important to Informix customers, although Sybase customers rated Solaris more highly than did Informix's customers. Informix is close to HP, which owns a stake in the company.

5. Markets and Applications

In December 1995, Informix announced its database connectivity solution for the Web, which will enable Web applications to more easily interact with Informix databases. The Web Interface Kits will address the needs of software professionals who use the more than 500,000 INFORMIX-4GL developer licenses.

Informix database technology is used in data warehousing, electronic commerce, and workflow imaging. Informix's data warehousing customers include MCI, Transamerica Commercial Finance, Home Depot, GTE, and Sears.

In December 1995, Informix announced its database connectivity solution for the Web, which will enable Web applications to interact more easily with Informix databases. The Web Interface Kits will address the needs of software professionals who use the more than 500,000 INFORMIX-4GL developer licenses.

6. Alliances and Partnering

The company's partners include consultants, systems integrators, hardware providers, and providers of data access, analysis, and management tools.

Informix works with systems integrators and independent software vendors, including Price Waterhouse, SHL Systemhouse, KPMG Peat Marwick, EDS, and CSC.

SAP uses Informix, and other relational databases. Depending on what a customer already has installed, SAP may prefer Informix over Oracle when it competes against Oracle's application business.

Informix has strategic business relationships with every major open systems hardware supplier, including AT&T, HP, ICL, IBM, Pyramid, Sequent, Silicon Graphics, and Sun.

In tools for application development, data access, and OLAP analysis, Informix partners with several vendors, including Information Advantage and MicroStrategy. It recently acquired the Stanford Technology Group.

Informix, HP, and Gemplus Card International are testing information-transfer architecture that connects database servers and personal identification cards. Informix will utilize its Online Dynamic Server 7.1 RDBMS to create databases on the cards.

7. Primary Competitors

Informix competes with IBM, Oracle, Sybase, and Microsoft in the database market. In the development tools market, Borland and Gupta (Centura) may be additional competitors, though they also support Informix with their tools.

Its Illustra/Informix combined product will compete with Fujitsu's Jasmine and Oracle 8. It will also compete with custom-integrated solutions for multimedia, Internet Web site storage, spatial data and time series.

8. User Satisfaction

Informix's satisfaction rating was 3.3, lower than in previous INPUT C/S studies. This may be because the company experienced over 50% growth in 1995. Weak security is perceived as a disadvantage of C/S systems by Informix customers. Informix can turn this to an advantage by promoting the security features of Illustra and Informix for Internet applications.

9. Expected Announcements and Strategic Direction

Informix is preparing to break out of its relational database niche by implementing parallel processing technology. This is intended to increase the company's market share and improve its database capabilities. Informix's advanced parallel processing system, Dynamic Scalable Architecture On-Line 8.0 XPS, was launched in early 1996. Informix 8.0 XPS supports parallel processing machines as well as computers in clustered symmetric multiprocessing architectures.

The next version of ODS—version 7.11 for Windows NT—will become available in January 1996. The company's Online Workgroup Server for Windows NT is scheduled to become available during the first quarter of 1996.

In November, Informix announced a strategic partnership with MobileWare to develop wireless remote access to Informix databases.

Informix expects to start signing third-party vendors for the database cards by mid-1996.

Informix's Universal Server, announced at the beginning of 1996, will be used for mission-critical transaction processing and data warehousing. It is based on both Informix's and Illustra's technology. This puts Informix in the lead with multimedia database support. However, Oracle 8 will provide a strong challenge because of the Oracle installed base.

P

Microsoft

1. Company Focus

The worldwide leader in desktop software, Microsoft has been able to leverage the highly profitable licensing of its DOS and Windows operating systems, combined with its technical advantages as the developer of these operating systems, to become the world's dominant software provider.

Microsoft is branching out from being a desktop and LAN software supplier to dominating the midrange and possibly enterprise server software platforms. Windows NT is already the fastest growing operating system for LAN servers. Its Back Office, currently lacking significant applications, with SQL Server database and Microsoft SMS systems management software, provides a foundation for workgroup systems.

2. Product Strategy

Microsoft's desktop systems and applications software for both business and consumers is being augmented by server solutions based on Windows NT and Back Office. Back Office is one of the fastest growing businesses for Microsoft.

Without a strong server product line, Microsoft's growth will stall. For enterprise servers, as well as PCs, Microsoft relies on companies like Digital and HP to support its Windows NT systems.

Internet Explorer, Microsoft's browser, is one of many products Microsoft produces for the Internet. Its recent Vermeer acquisition has already produced Front Page, an Internet publishing system.

3. User Appeal

Microsoft has reached a point where it is differentiated as much by the consistent user interface of its MS Office and Windows products as it is by its huge market presence and marketing budget.

Microsoft's product ship strategy can best be described as "Better to be first than right." Microsoft's Windows and MS Word were not stable until the third release. Microsoft's persistence and agility were shown with its on-line services strategy, where it took its proprietary MSN and turned it into an Internet node quickly and decisively.

4. Platforms

Microsoft's strategic platforms are its own Windows 95 and NT operating systems. DOS 7 was released in 1995 and is still used for legacy environments.

5. Markets and Applications

Microsoft offers more than 50 programs, including a variety of applications and multimedia titles. Its most-used programs are its operating systems. It is one of the few software companies that has managed to penetrate all sizes of business.

6. Alliances and Partnering

Microsoft is a master of leveraging its partners. It is currently using partners like NCR, Compaq, Computer Associates, Digital, HP, Sequent, and Tandem to propel it into the enterprise.

Many independent software vendors have established partnerships with Microsoft to take advantage of the company's market dominance and marketing clout.

7. Primary Competitors

In the operating systems environment, IBM is its major competitor. Apple perceives itself as a competitor to Microsoft, but in reality Apple competes with Microsoft's hardware partners Compaq and Dell.

In the database market, Sybase, Oracle and Informix are competitors. Sybase, in particular, having supplied Microsoft with SQL Server initially, is highly motivated to compete with Microsoft. Powersoft's PowerBuilder competes with Microsoft's Visual Basic as a C/S application development tool. Of the database vendors, Sybase is best positioned to stifle Microsoft's growth because it has a longer history of retail distribution than Oracle.

Novell competes with Microsoft for LAN network software, but Novell sees its future as complementing Microsoft's product line.

8. User Satisfaction

Microsoft gained a relatively high rating of 3.6. Its users are satisfied with the consistency of the user interfaces of its products. Its product quality varies, new products often being shipped prematurely to gain market share.

9. Expected Announcements and Strategic Direction

Microsoft's Internet presence, the Microsoft Network, will change the distribution of Microsoft's software. Major packages will be purchased through traditional channels and these will become platforms that can be extended by downloading add-ons from Microsoft's servers. Microsoft Network is a:

- Primary site to visit on the Internet
- Two-way network, potentially allowing Microsoft to offer technical support services for home computers by managing them remotely, as IBM already does

Microsoft's distributed object strategy rests on OLE. In 1996, expect network OLE to propel Microsoft into connectivity software, possibly through acquisitions. OLE will fuel the growth of powerful Pentium Pro computers. In the coming year, Microsoft plans to establish NT Workstation as its standard for corporate desktops.

Microsoft has contracted with Software AG to port Network OLE (Object Linking and Embedding) to a variety of UNIX platforms and to IBM's OS/400 and MVS operating systems over the next three years. The deal overlaps the one Microsoft made with Digital in 1993.

A clustering API for Windows NT, which should be available in the first half of 1996, will eventually allow users to connect multiple servers together in a single environment.

Several enhancements of Windows 95, which will be aimed at home users, small businesses, and Internet users, will be introduced in 1996. These enhancements will include a built-in personal information manager; improved ISDN and Internet support; conferencing based on T.120 and H.320 standards; and support for DirectX 2.0, Reality Lab 2.1, and Quartz 2.0 MPEG multimedia. The enhancements will be built into a series of three Windows 95 upgrades, which will be available next year.

Service Pack 1 for Windows 95, which will be released in the first quarter of the new year, will include a NetWare 4.1 client, a Data Link Control protocol stack, MPEG support, and infrared driver support. Later, Microsoft will introduce its Internet Add-On for Windows 95 and NT, which will include support for Web searching, HTML 3.0, and Java. The product will also feature a new Internet wizard, single-button Internet connectivity, and Internet-based telephony support. Before the end of 1996, Microsoft will combine the Service Pack 1, Internet Add-On, and the communications, multimedia, power-management, and conferencing features into a new Windows version, code-named Nashville.

Q

NEC Corporation

1. Company Focus

NEC has three major product subsidiaries in the United States: NEC America (telecommunications products), NEC Electronics (microprocessors), and NEC Technologies (computers and peripherals). NEC manufactures more than 15,000 products and has customers in more than 150 nations.

2. Product Strategy

NEC America's Corporate Networks Group (CNG) recently introduced the UAP1000, UAP2000 and UAP3000. The UAP (User Application Processor) is the UNIX-based OAI Software Application Server (SAS) that is a required component for any OAI implementation.

NEC is aggressively marketing Windows NT computers. It has leading monitors, being one of the first to meet Swedish safety standards. It also supplies many peripherals, including printers and disk drives.

Recently NEC has shown interest in marketing software in the U.S. for C/S applications development.

3. User Appeal

NEC is a world leader in communications, computers and semiconductor components. Its appeal in Japan is that it is a leader in PCs. NEC's customers are interested in making information more accessible to users and combining jobs for efficiency. Its Windows NT servers have been sold as efficient machines for workgroups. NEC needs to capitalize on this business and strongly promote a scalable line of computers. NEC is not the first vendor that comes to mind for a workgroup computer running Windows NT; the company needs to strengthen its U.S. image and promotional efforts, leveraging its installed base of monitors and disk drives.

4. Platforms

NEC offers its Windows NT tower computer on RISC (MIPS) and Intel platforms. The RISC platforms are attractive to software developers.

5. Markets and Applications

NEC has three major products subsidiaries in the United States: NEC America (telecommunications products), NEC Electronics (microprocessors), and NEC Technologies (computers and peripherals).

6. Alliances and Partnering

NEC has many global partners, but needs to strengthen its relationships with third-party software vendors.

7. Primary Competitors

NEC's competitors in the Window NT server business include Digital, Compaq and HP.

8. User Satisfaction

NEC ranked the highest of the Japanese vendors with a rating of 3.3. Its users tend to see high price as the main barrier to implementing C/S solutions.

9. Expected Announcements and Strategic Direction

Expect to see more effort to promote C/S software, especially from NEC's research laboratories in the U.S. The Windows NT server market is highly competitive. NEC has a strong technical base; it needs to leverage it with aggressive marketing for workgroups. NEC should take advantage of its distribution channel for peripherals to market turnkey systems based on Windows NT.

R

Novell

1. Company Focus

Novell has refocused on networking, seeing its value in adding software to improve the administration and connectivity of networks. It will support LANs, Intranets and the Internet.

2. Product Strategy

Novell's NetWare 4.1 provided the company with a boost in revenues in 1995. In 1996, it will increasingly rely on using its software to connect to the Internet and support UNIX and Windows networks.

In September 1995, the networking software leader drastically changed its strategy, including: abandoning its development of the SuperNOS network operating system that would have combined UnixWare and NetWare; selling off its UnixWare business to the Santa Cruz Operation; porting NetWare services to other software platforms, such as UNIX and Windows NT; turning over development of NetWare for Systems Application Architecture (SAA) to IBM; shipping the symmetric multiprocessing NetWare Loadable Module through agreements with 18 other vendors; and readying a new family of application programming interfaces that Novell promotes as being easier to integrate than NLMs.

3. User Appeal

Novell is able to attract both large and small companies. Its appeal is its ability to integrate diverse platforms. Users look to Novell for affordable solutions to make their businesses more efficient through connecting computers. Unfortunately, many of the small businesses stop with basic connectivity and Novell failed to leverage its applications business into its networked platforms. Novell is in an excellent position to support the small business with distributed applications, as it is attempting to do with its TeamWare.

4. Platforms

Novell is working on porting NetWare services to major software platforms, including UNIX and Windows NT. For several years NetWare has run on UNIX, but Novell has never been able to displace native UNIX networking successfully from Sun and others. NetWare is a cross-platform networking solution, but more acceptable to PC than to workstation environments.

5. Markets and Applications

Novell is both a large corporate supplier and a small business supplier. Its network of developers, systems administrators, engineers and resellers is heavily supported. Novell has more than 60% of the network operating system market and is in over 80% of major corporations.

6. Alliances and Partnering

Novell has alliances with dozens of major companies, including hardware and software vendors, Internet solutions providers, intelligent device manufacturers, and industry standards groups. Specific companies include: IBM, Digital, Intel, Compaq, HP, Apple, AT&T, Dell, AT&T GIS, Siemens Nixdorf, Fujitsu, NEC, SCO, Sybase, Oracle, Informix, PeopleSoft, Dun & Bradstreet, Computer Associates, 3Com, and Netscape Communications.

Novell has a new open-server strategy in partnership with SCO and HP.

Novell and IBM will work together on NetWare for SAA, which links NetWare LANs to IBM-compatible mainframes. IBM is taking the lead on development, while Novell is focusing on marketing. Both companies will sell and support the product.

7. Primary Competitors

Novell's primary competitor in LAN networking is Microsoft, but Banyan, Artisoft and Sun are also competitors. In the network services software segment, Novell has many competitors, but they lack a focus on networking. For example, ICL offers X.500 directory services software and HP offers network management.

8. User Satisfaction

Novell has many highly satisfied users, rating it 3.7 on average. Novell has excellent pre-sales support and easily understood documentation. It has also managed to attract resellers and third-party system administrators to install and manage its software. Novell helped create the LAN administrator

position. Engineers gain certification in Novell support. Other vendors need to consider how they can integrate their software into the user environment by creating appropriate job roles and processes.

9. Expected Announcements and Strategic Direction

Novell's Symmetric Multiprocessing NLM, which will let users take advantage of multiple processors in computer-intensive tasks, will be available through OEMs such as AT&T GIS, Dell, HP, and IBM by the first quarter of 1996.

Novell plans to continue to release new NetWare versions in 1996 and 1997.

S

Oracle

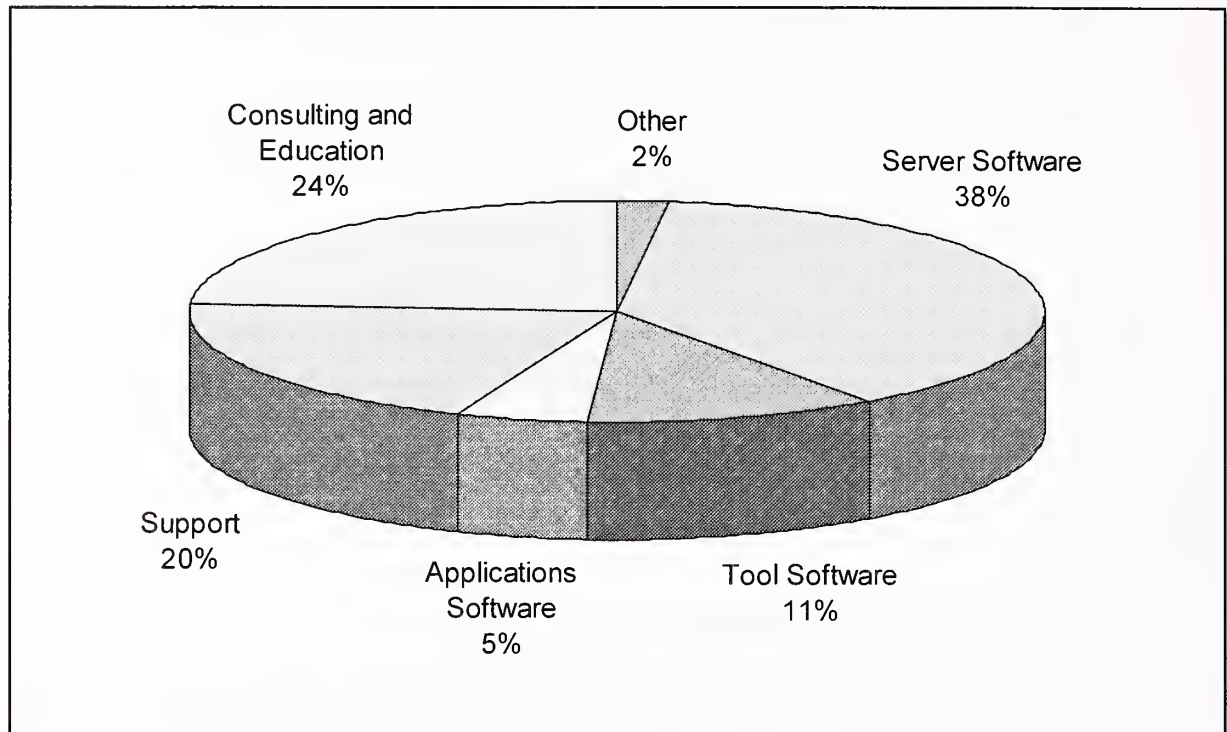
1. Company Focus

Oracle is the world's largest supplier of software for information management and the world's second largest software company.

2. Product Strategy

Oracle's strategy is to dominate enterprise software, building on its database and connectivity software. Its revenues break down as shown in Exhibit III-3.

Exhibit III-3

Oracle Revenues by Product Category for Fiscal 1995*Source: Oracle and INPUT***3. User Appeal**

Oracle differs from SAP, its chief C/S applications software competitor, by building its solutions on its own database, rather than relying on other vendors. This usually leads to implementation of a two-tiered architecture, spreading data and applications between client and server and embedding the business logic into the database. Oracle can offer three-tiered or multi-tiered solutions where appropriate.

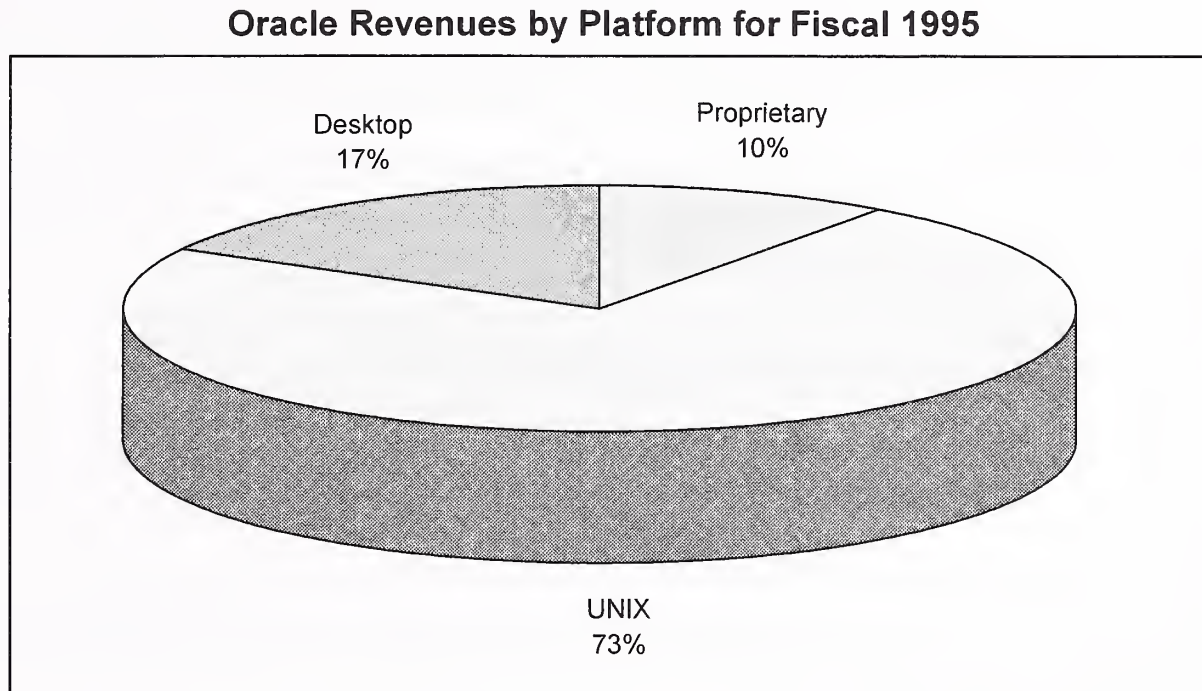
SAP, in contrast, provides centralized control with a three-tiered architecture. In a SAP system, the applications logic resides on a different machine from the database. SAP tends to require more systems integration effort than Oracle.

4. Platforms

The Release 10 application modules run only on Oracle's own database, linked with a Windows front end. They are portable to PCs, Digital VAX minicomputers, UNIX platforms, and mainframes.

Exhibit III-4 shows how Oracle's revenues break down by platform.

Exhibit III-4



Source: Oracle and INPUT

Windows NT is rapidly becoming a major platform for Oracle and its newer workgroup platforms will be supported aggressively, first on NT and secondarily on UNIX.

5. Markets and Applications

Oracle clients, located in more than 90 countries, represent a variety of industries, from manufacturing to telecommunications to defense. Target markets include electric utility, auto manufacturing, consumer packaged goods and aerospace/defense.

Oracle's C/S products include the Oracle 7 multimedia relational database; the Oracle Rdb and Oracle Media families of software products for database management; Developer/2000, Designer/2000 and Discover/2000, tools for enterprise-wide C/S applications; and Oracle Applications, packaged C/S solutions for accounting, human resources, and manufacturing business operations. Oracle 7 is a parallel database, which retrieves and modifies information on multiple servers; it comes in Personal, Workgroup and Enterprise versions. Oracle also offers Oracle Power Objects, which lets desktop and workgroup databases share data with desktop applications.

6. Alliances and Partnering

Oracle has business alliances with Baan, NEC, Intel, Novell, HP, and SHL, among others. In addition, more than 5,000 companies participate in Oracle's Business Alliance Program to develop Oracle-based products and services, including more than 2,000 who joined in 1995.

Oracle is developing relationships with consulting firms to set up a program similar to SAP's "Logo Partners" program. Price Waterhouse was the first firm to sign on.

7. Primary Competitors

In terms of market share, Oracle ranks second in the C/S applications market, after SAP. Other competitors are PeopleSoft and Dun & Bradstreet.

8. User Satisfaction

Oracle had the highest satisfaction rating of the major database vendors, at 3.4.

9. Expected Announcements and Strategic Direction

In a challenge to Microsoft's BackOffice server software suite, which works only with Windows NT, Oracle is developing a cross-platform server suite, code-named Bandwagon. It was released in 1996.

The Power Mac, OS/2, and Windows 95 versions of Power Objects, the application development tool developed by Oracle and Apple, will be available in the first quarter of 1996.

Oracle's strategic focuses include commercial development of the Internet (partly via the company's Web TV, due in second-quarter 1996 for \$30 per month) and gaining market share from SAP.

Oracle is expected to enter the hardware market in 1996 with the introduction of a below-\$500 communications device called a Network Computer, which will be used as a client for the Internet and other on-line services.

T

PeopleSoft**1. Company Focus**

PeopleSoft is the leader in C/S human resources applications. It has leveraged its expertise to provide financial and other enterprise applications.

2. Product Strategy

PeopleSoft sells a line of C/S financial operations known as PeopleSoft Financials 3.0, in addition to HRMS (Human Resource Management Software) 4.0.

3. User Appeal

PeopleSoft differentiates itself from its competitors by focusing less on lengthy consulting projects and more on timely implementation and return on investment.

PeopleSoft differentiates itself by integrating leading databases and the MS Excel spreadsheet into its applications. Where software components already exist, PeopleSoft will tend to use them rather than program its own modules. This has led to rapid implementation, although its product schedules depend heavily on those of its suppliers.

4. Platforms

PeopleSoft Financials run with Gupta SQLBase (OS/2), Microsoft SQL Server (OS/2), Hewlett-Packard Allbase/SQL (MPE/iX), Oracle 7 (all major UNIX platforms and VMS), Oracle RdB (VMS), IBM DB2 (MVS) and several database gateways.

5. Markets and Applications

PeopleSoft sells horizontal applications by vertical market. For example, health services was an early market for PeopleSoft's HR software.

6. Alliances and Partnering

PeopleSoft is revamping its C/S partners program, which has two components: implementation and technology partners. The firm is also adding a third category—global solution providers.

PeopleSoft has partnerships with industry-leading hardware, database, implementation, and systems integration vendors to help customers maximize their use of PeopleSoft applications. Partners include the Big Six accounting firms, Digital, IBM, AT&T GIS, Data General, Gupta, HP, Informix, Microsoft, Novell, Oracle, Sun, Sybase, Unisys, and Sequent.

7. Primary Competitors

PeopleSoft ranks third in the C/S applications market, after SAP and Oracle. Dun & Bradstreet is also a competitor.

8. User Satisfaction

Long a market leader in human resources management software, PeopleSoft has been criticized for performance and integration problems with products that have not been designed for human resources applications.

The company has also been criticized for placing too much of the responsibility for functionality on its clients, rather than emphasizing application logic on the server. PeopleSoft claims its new releases make its tools flexible enough to build balanced, three-tiered C/S systems.

9. Expected Announcements and Strategic Direction

PeopleSoft is expanding to include manufacturing software applications, which will give the company a full suite of products.

U

SAP

1. Company Focus

SAP is the leading independent global provider of C/S corporate application solutions. German-based SAP has more than 23 years of experience in the business applications market. SAP wants to focus on developing software, with no more than 25% of its revenues coming from support services. This enables it to leverage sales through its partners, which include major systems integrators and professional services firms.

Its worldwide revenues grew to \$1,887 million in 1995, at an annual rate of 47%. SAP's 1995 year end headcount was 6,857, growing at 31% from 5,229 at year end 1994. This included 562 new German hires, 398 in the U.S. and 147 in Japan.

2. Product Strategy

R/3, SAP's flagship C/S application suite, is marketed under the premise that some businesses need a single suite of software products to track and control companywide business operations. R/3 uses a three-tiered C/S architecture that separates the functions on a system into database, application and presentation layers. R/2 is its older mainframe applications suite that is still in demand from a few more conservative customers.

SAP's product strategy is to develop versatile solutions that are easily and quickly adapted to new business processes, freely integrated throughout the enterprise, and open to other technologies or applications. SAP concentrates on marketing robust product functionality and open, integrated, flexible solutions. Unlike Oracle which has its own database, SAP integrates with several databases. This is positive, in that it enables a customer to use its installed systems, but negative in that this may require significant integration. For example, SAP works closely with Informix.

3. User Appeal

A key selling point for SAP is its ability to support corporations across the globe, taking into account local variations in terms of currency, business regulations, and business practices. Its highly leveraged sales strategy involves training its systems integrators and promoting their commitment to SAP.

4. Platforms

R/3 is available on a variety of platforms, including AS/400, IBM AIX, HP-UX, Sun Solaris, Windows NT, Digital UNIX, Bull BOS/X, and SNI SINIX. It is also compatible with major databases such as Oracle, Informix and Adabas from Software AG. In addition, ALE (Application Link Enabling), which is bundled with R/3, can be used to link R/3 C/S applications with otherwise independent systems.

Release 3.0 of R/3 shipped in the fourth quarter of 1995.

5. Markets and Applications

The R/3 suite offers tailored applications for four core functional areas: financial and accounting; human resources; manufacturing and logistics; and sales and distribution.

More than 4,800 companies have R/3 installations. In January 1996, SAP claimed that SAP's R/3 had been installed 5,200 times. Most of SAP's customers represent the following industries: high technology, chemicals and pharmaceuticals, oil and gas, utilities and telecommunications, automotive manufacturing, consumer packaged goods, and health care. Specific companies include: Apple, IBM, Merck, Colgate-Palmolive, Pacific Gas and Electric, BMW North America, and Scott Paper. Its largest deal ever was closed in 1995 to install R/3 on 30,000 workstations at Deutsche Telekom over the next three years.

The complete suite of SA products is available in 13 languages.

6. Alliances and Partnering

SAP's technology partners, which work with SAP in technology integration, include: IBM, Informix, Intel, iXOS Software GmbH, Microsoft, Oracle, and Software AG. The company's platform partners include: Apple, AT&T, Compaq, DG, Digital, HP, IBM, Sequent, Siemens Nixdorf, and Sun Microsystems. These two groups help ensure that SAP software is compatible with most popular hardware, software and database platforms.

Through its "Logo Partners" program, SAP works with a small number of consulting firms to establish, extend and enhance SAP customers' R/3 expertise. These consulting firms include EDS, IBM Consulting Group, Hewlett-Packard, Siemens Nixdorf, CAP Gemini America, Computer Sciences Corp., and the "Big Six" consulting firms: Andersen Consulting, Coopers & Lybrand, KPMG Peat Marwick, Price Waterhouse, Deloitte ICS, and Ernst & Young. SAP's competitors are working to develop similar

relationships with consultancies. However, SAP has an early market lead in this area, particularly among the large companies that make up most of SAP's clients.

SAP also has a group of implementation partners—relatively small, specialized national and regional companies—that provide SAP customers with the tools required to implement SAP software.

7. Primary Competitors

SAP's top competitors are Oracle, Dun & Bradstreet Software, and PeopleSoft.

Competitors are still trying to catch up with SAP, which was the first company to offer a totally integrated enterprise-wide system and still dominates the market, particularly in the high end.

8. User Satisfaction

SAP conducts annual customer surveys to evaluate the company's services, partners, products, and overall ability to meet clients' needs. The latest survey, conducted by SAP, gave SAP a 7.5 rating on a scale of 1 to 10. In particular, SAP notes that the consulting area has improved in recent years. Survey results are followed closely, and used to determine employee compensation and strategic direction.

9. Expected Announcements and Strategic Direction

SAP lost its U.S. President, Klaus Besier, at the end of 1995 and the new leadership has to prove it can continue SAP's phenomenal growth. It will focus on improving its educational services in 1996, as well as on making use of business-to-business electronic commerce.

SAP will increase its marketing efforts in the area of growth companies with \$175 million or less in revenues. In addition, the company will target the financial services and health care markets more aggressively in early 1996, and the retail market in late 1996.

The company will continue to develop object-oriented functions for R/3, with the goal of simplifying integration with customers' niche solutions. R/3 typically requires significant integration. SAP is expected to increase development of software modules that automate the integration and management of R/3.

V

SHL Systemhouse (part of MCI)

1. Company Focus

The largest systems integrator in Canada, SHL focuses on cost effectively managing technology implementation by working with clients in planning, building and ongoing management of systems solutions. The company is considered a leader in development of C/S and systems integration services, which it offers through its Transformational Outsourcing program.

MCI has been known primarily for its competitive long-distance offerings. However, in a move intended to position MCI as a single-source provider of information and communication systems, MCI started a consulting division (the Integrated C/S Division) in 1994 and acquired SHL Systemhouse in September 1995.

SHL Systemhouse has been more closely aligned with the UNIX market than has either EDS or Andersen Consulting. It is also closer to NeXT for object-oriented solutions. SHL employs 5,500 professionals.

2. Product Strategy

SHL has three main lines of business: systems integration and consulting; technology development; and systems operations and outsourcing. SHL TRANSFORM is an integrated process management tool that enables companies to migrate to C/S systems.

3. User Appeal

SHL is chosen as an alternative to Andersen and EDS because it is smaller and has more focus on UNIX. Its telecommunications market expertise made it attractive to MCI, which already had a network integration business of over \$100 million annually. With MCI's capital, SHL should be able to take a longer term view and grow faster.

4. Platforms

SHL is particularly strong in UNIX platforms. It has also installed some object-oriented applications based on NeXT's proprietary platforms.

5. Markets and Applications

SHL has several large-scale outsourcing contracts in Canada, the United States, Europe, Mexico and Asia. The largest of these, with Canada Post, is valued at \$1 billion.

6. Alliances and Partnering

SHL has recently been acquired by MCI. SHL has close relationships with government and telecommunications vendors. It supports leading open systems products.

7. Primary Competitors

EDS is SHL's leading competitor for outsourcing. For systems integration, Andersen Consulting, TSC and others are competitors. As the systems integration arm of a major communications company, SHL competes with GTE Data Services and Bell Communications Research and the Bell Laboratories portion of Lucent.

8. User Satisfaction

SHL had a low satisfaction rating of 2.5, but many users were not familiar with SHL. SHL is not perceived as providing a standard solution, which is one reason customers rate it low.

Over the last two years, SHL has tried to improve its image from being a leading technology company to being a financially stable entity. Its earlier financial instabilities gave it a weak market perception. MCI's backing should help improve SHL's rating.

9. Expected Announcements and Strategic Direction

SHL is currently in a state of flux. With MCI's backing, it should be able to capitalize on its communications expertise and be a leader in Internet applications management, outsourcing and systems integration.

W

Sybase/Powersoft

1. Company Focus

Sybase has seen increased revenues from its services business over the last year. Services have gone from representing 30% of revenues to nearly 40%. The company had a hard year in 1995 as it made the transition to Sybase System 11. Problems were attributed to lack of scalability at the high end.

Sybase's acquisition of Powersoft is helping it gain more presence in software development groups, as well as potentially giving it retail channels for low-end database products like Watcom.

Sybase believes in hands-off management of its subsidiaries. INPUT questions whether it would not be better to integrate its acquisitions into its mainstream business and align the goals of its subsidiaries more closely with those of the parent.

2. Product Strategy

The company's software databases, middleware and software tools provide customers with desktop-to-enterprise solutions. Sybase is more of a connectivity software vendor than the other database companies. It views its strategic advantage as being the ability to integrate with corporate data, whether in databases, record managers or files. The early advantage it had by integrating its database with IBM VSAM files is being eroded as Oracle and others catch up.

3. User Appeal

Sybase markets itself as an innovative company that provides its customers with an open, adaptable information systems architecture that enables them to develop and deliver complete information systems solutions to facilitate rapid business change.

System 11 DBMS, the company's soon-to-be-introduced database product suite, provides breakthrough OLTP performance for single as well as symmetric multiprocessing (SMP) systems, using the Sybase Virtual Server Architecture's advanced load-balancing technology that maximizes performance across multiple CPUs. It is the only database in the industry that has been developed according to ISO 9000-compliant processes.

Sybase's Enterprise CONNECT C/S family features a range of APIs and gateway products that support diverse mainframe interoperability requirements. OmniSQL, part of the Enterprise CONNECT suite, is the first gateway to offer users simultaneous, transparent access to the whole range of corporate data. Sybase's Replication Server, which replicates data from Sybase SQL Server databases to more than 22 relational and non-relational data sources via Enterprise CONNECT, allows distributed databases to act as both owners and subscribers of a common data set. The Enterprise CONNECT family also provides a comprehensive suite of data access, data movement, and interoperability management products designed to help customers integrate heterogeneous desktop and mainframe environments.

The company's new Open Client for MVS software manages all communications between a client application or tool and Sybase SQL Server or other databases and applications built using the Open Server API toolkit.

Powersoft, which merged with Sybase in February 1995, is a leader in C/S application development software. Powersoft's PowerBuilder software facilitates development and deployment of fast C/S applications. PowerBuilder 5.0, the latest version, increases application performance and scalability. In October, Powersoft also announced S-Designor for PowerBuilder version 4.2.1, a new release of its high-performance C/S design tool.

Watcom International, Powersoft's wholly owned subsidiary, provides local and server databases as well as high-performance compiler and language tools. Its Watcom SQL database engine is incorporated into PowerBuilder Enterprise for Windows, PowerBuilder Desktop and InfoMaker.

4. Platforms

Sybase has successfully deployed Powersoft's PowerBuilder 5.0 application development tools on Macintosh and UNIX platforms, broadening its installed base from its Windows roots, which include support for Windows 3.x, Windows 95, Windows NT (Intel) and Windows NT (Alpha).

Watcom SQL runs on DOS, Windows, Windows NT, Windows 95, NetWare, and OS/2. Sybase System 11 supports NetWare, Windows NT, and UNIX.

5. Markets and Applications

Sybase provides C/S products in four key areas: RDBMS; interoperability/middleware products; application development tools; and new media. The company's products are optimized for four market segments: OLTP, data warehousing, mass deployment, and the electronic marketplace.

Sybase has more than 20,000 customer sites, including more than 700 of the Fortune 1000 and 86 of the Fortune 100. Customers are concentrated in financial services, telecommunications, petrochemicals, government, manufacturing, and health care. Watcom SQL has shipped more than 500,000 units around the world.

6. Alliances and Partnering

Sybase has working relationships with a range of software vendors, including PeopleSoft, Dun & Bradstreet Software, and Baan. The company also has strategic relationships with hardware vendors, including AT&T GIS, IBM, Digital, Sun, HP, Bull, Siemens Nixdorf, ICL, Sony, Fujitsu, and NEC. In addition, Sybase has relationships and certification programs with more than 100 tool vendors.

Sybase develops specialized applications, tools and services through its direct sales force and through its Open Systems partner program, which includes systems integrators, VARs, and independent software vendors.

7. Primary Competitors

Sybase's main competitors are Informix, Oracle, and Microsoft; it competes with these companies in both direct and indirect channels.

8. User Satisfaction

Sybase was rated the same as Informix, and similar to Oracle, with 3.3. Powersoft alone rated 3.4. Sybase has received strong endorsements from PeopleSoft and more than 100 independent software vendors for System 11.

The company surveys customers to determine customer satisfaction on a quarterly basis. According to Sybase, more than 90% of customers are satisfied.

Sybase offers a variety of training and support programs for its entire product line through its Sybase Worldwide Professional Services and CS&S divisions.

9. Expected Announcements and Strategic Direction

With the acquisition of Powersoft, the creation of the company's new media unit, and the introduction of System 11, Sybase is focusing on interoperability. In addition, Sybase is placing more emphasis on middleware, object-oriented tools, three-tiered computing, and on strengthening its reseller relationships. Sybase is also following Informix's lead and more aggressively pursuing vertical markets.

Application solutions based on System 11 are being introduced through 1996, starting in December 1995. PowerBuilder 5.0, Open Client for MVS/OE, and Open Server for MVS/OE are scheduled to ship in the first half of 1996. Watch for Sybase to offer more vertical solutions like those of Oracle and Informix.

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Customer Satisfaction

This chapter compares vendors based on customer satisfaction.

A

Customer Satisfaction

Respondents to the user survey were asked to rank on a scale of 1 to 5 their satisfaction with vendors. If they had no experience with a vendor, this was indicated and no response was recorded.

Three categories of vendors form the basis for comparing customer satisfaction ratings:

- Systems vendors
- Systems software vendors
- Applications software vendors

1. Systems Vendors

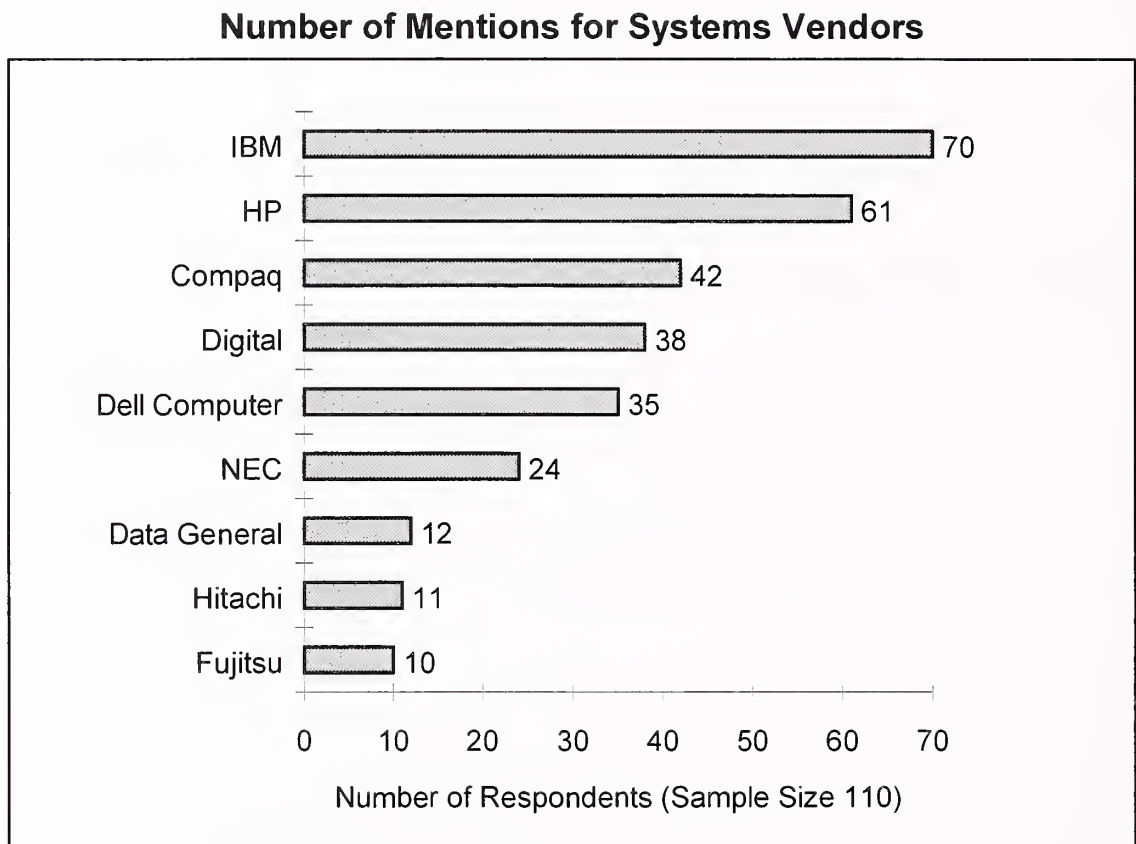
The systems vendors are broken down into U.S. PC hardware vendors, U.S. server hardware vendors, and Japanese hardware vendors. As in the *U.S. Client/Server Market Forecast, 1993-1998* report, satisfaction with PC hardware vendors tends to be high. They have invested in technical support and customer expectations are low.

Exhibit IV-1 shows the number of times a vendor was mentioned by the respondent. This shows how well the vendor is making its presence felt to users. Not every customer mentions every vendor; customers tend to mention the vendors that they feel are most important to them.

IBM still is the most frequently mentioned hardware vendor; however, established vendors should notice that Dell and Compaq are increasingly

mentioned as corporate vendors. The threat of Japanese vendors to the U.S. market is present. Currently the Japanese vendors are best known for peripherals. However, NEC, the leading Japanese PC vendor, has recently made a push with Windows NT servers. Hitachi and Fujitsu are particularly strong in storage solutions, both magnetic and optical. The mention of Japanese vendors was stronger than in INPUT's 1993 C/S user survey, where they were barely mentioned.

Exhibit IV-1



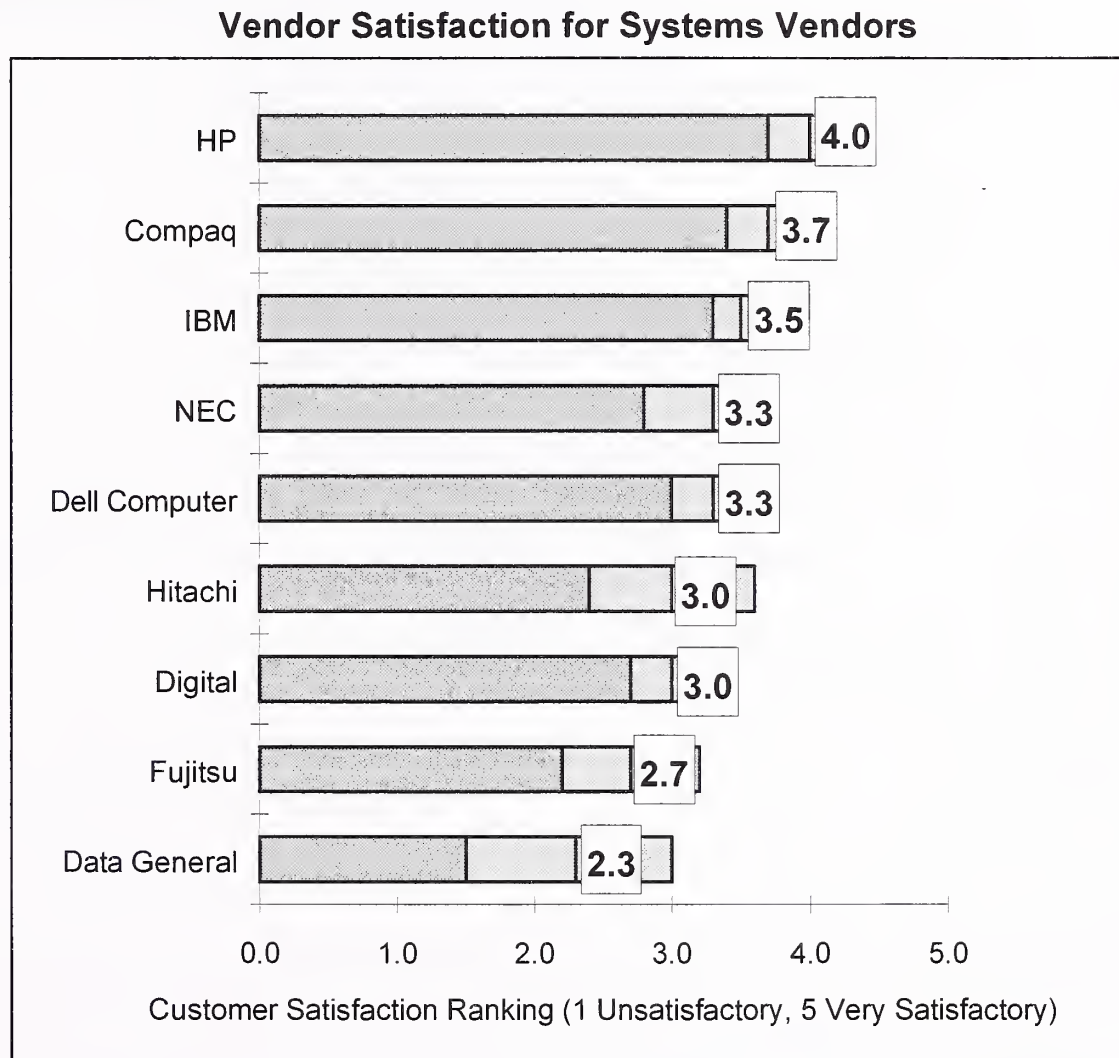
Source: INPUT

Exhibit IV-2 shows the vendor satisfaction rating on a scale from 1 to 5. The chart shows three levels of measurement to reflect the confidence in the results, given that the sample was fairly small. The number gives the average satisfaction rating. The diagonally shaded area shows the 95% confidence interval for this mean. It means that INPUT is 95% sure from its survey, assuming it reflects the corporate population, that the average satisfaction rating for a vendor lies within the confidence interval. Appendix C gives the numbers plotted. If the interval is wide then it means there is little agreement between the respondents as to the satisfaction rating. When most respondents are in close agreement, the interval is narrow.

Hewlett-Packard is the highest rated vendor, living up to its reputation for customer satisfaction, with little variation between respondents. There is

less satisfaction, and wider variability, in the results for the Japanese vendors. IBM is another consistent vendor. With 3.5, it rates below Compaq and HP, but it creates a similar impression on most of its users. DG is still struggling to satisfy its users, providing niche storage solutions and serving its installed base with UNIX solutions.

Exhibit IV-2



Source: INPUT

2. Systems Software Vendors

The systems software vendors are broken down into vendors of systems platforms, databases and development tools. There is considerable overlap with IBM, Microsoft and Computer Associates in the database business as well as Informix, Oracle and Sybase. Also, Oracle and IBM compete with SAP in the applications software business.

Exhibit IIV-3 shows how many respondents there were for each vendor in the survey. Novell and Microsoft are well established in most corporations.

Exhibit IV-3

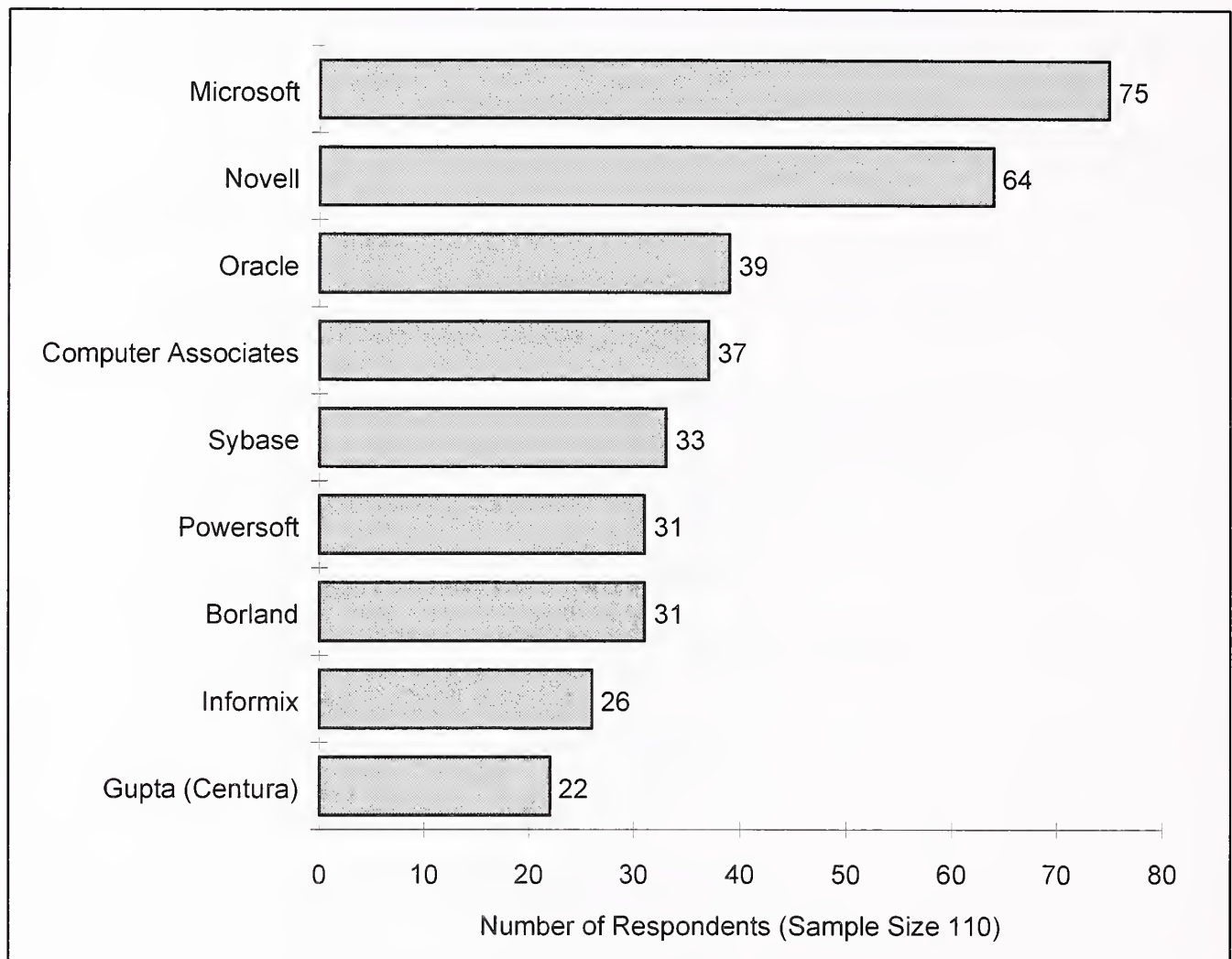
Frequency of Mention for Systems Software Vendors*Source: INPUT*

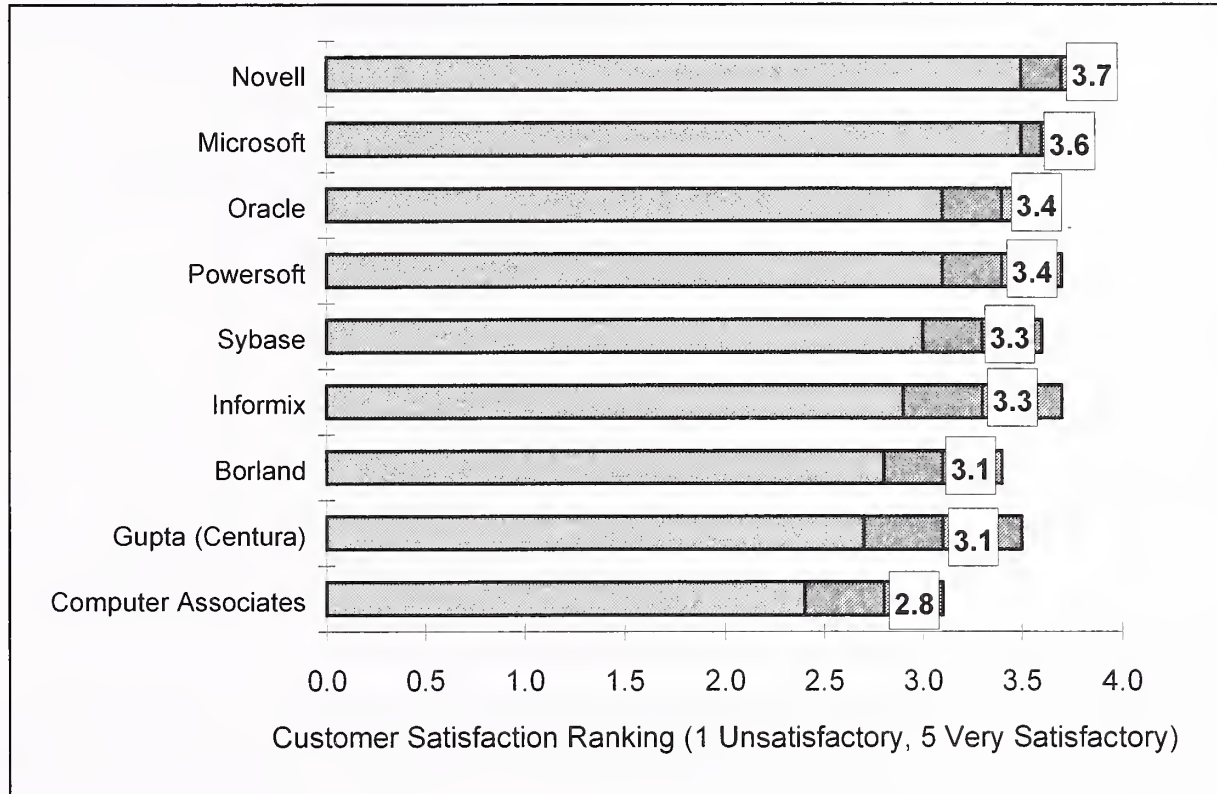
Exhibit IV-4 shows the level of satisfaction with the systems software vendors. Users had consistently high ratings of 3.7 for Novell and 3.6 for Microsoft. The database vendors ranked lower, probably because their products are more complex. Database vendors need to be careful to set customer expectations in order to raise their satisfaction ratings. There was more variation in answers from Informix and Sybase customers than from Oracle ones. The larger size of Oracle and greater promotion of a corporate image could lead to this perception.

It is amazing that CA has grown so large with such a low satisfaction rating of 2.8. However, systems management software is complex to sell and customers' experience may not have met expectations. The survey suggests that higher than expected maintenance costs are one reason for dissatisfaction with CA. Another problem suggested by the survey is that many CA customers rate the availability of packaged software as a major

reason for implementing C/S solutions. When purchasing CA's products, they may be expecting the software to require less support and maintenance than it actually requires.

Exhibit IV-4

Vendor Satisfaction for Systems Software Vendors



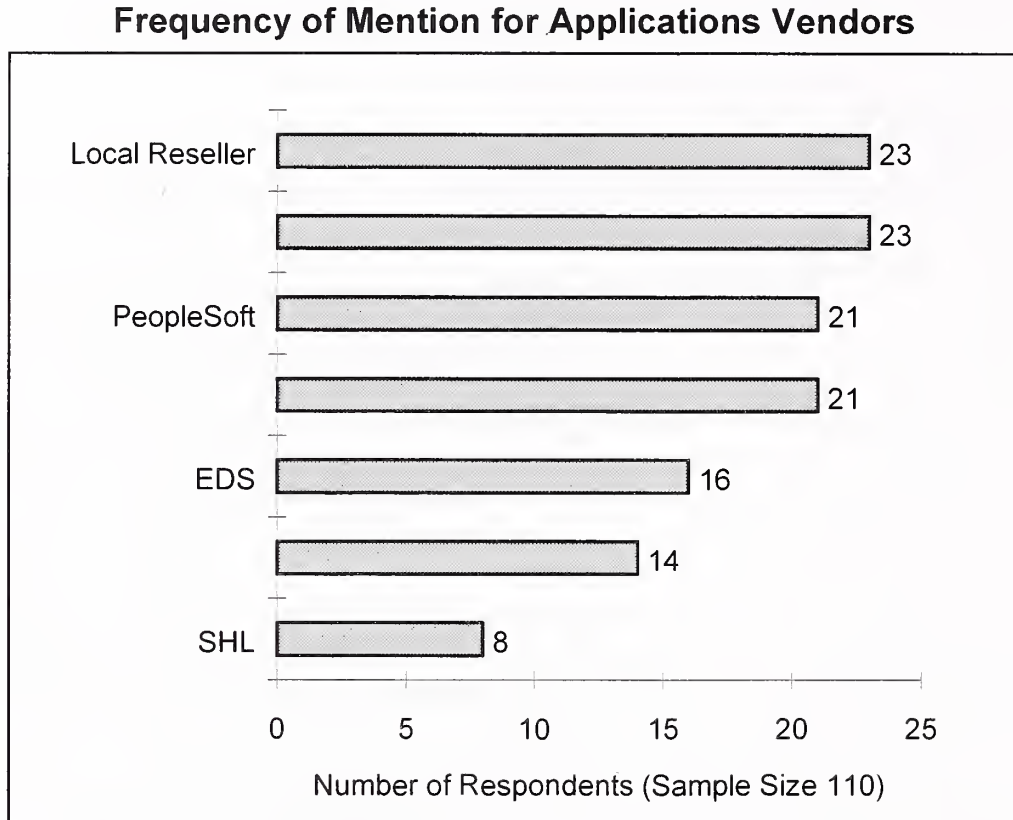
Source: INPUT

3. Applications Vendors

The applications vendors are broken down into applications software vendors and systems integrators. Also, users were asked to evaluate local resellers.

Exhibit IV-5 shows that almost one third of users were customers of a local reseller. Andersen was the most frequently mentioned systems integrator. Surprisingly, many customers were familiar with PeopleSoft. As Dun & Bradstreet makes a comeback, PeopleSoft will face increased competition. EDS and SHL are both stronger in outsourcing than they are in systems integration. They have many opportunities to outsource client/server systems for medium-sized and small companies.

Exhibit IV-5

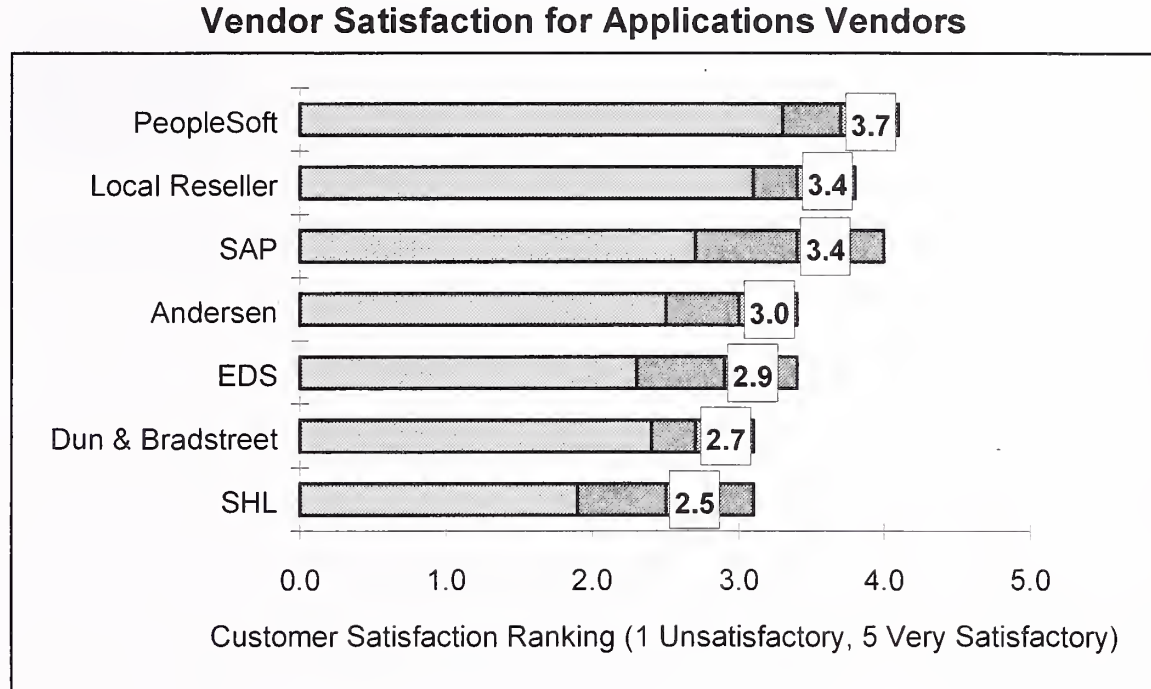


Source: INPUT

Exhibit IV-6 shows the satisfaction ratings for applications vendors. The companies with better defined products, like SAP and PeopleSoft, have greater customer satisfaction. Even companies that install customized software need to agree with customers on exactly what is expected.

SHL customers rate lack of standards higher than many other vendors' customers as a barrier to implementing C/S systems. SHL, with its UNIX strengths, may be perceived as offering more customized, less standard solutions than EDS or Andersen. Dun & Bradstreet customers rank ease of programming C/S applications more highly than most. SmartStream should address concerns of D&B users with its application partitioning and flexible approach to systems design.

Exhibit IV-6

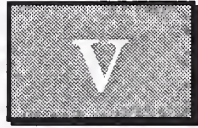


Source: INPUT

4. Summary

HP received the highest satisfaction rating. The better specified the product or service is upfront, the more satisfied the customer will be. Company growth and satisfaction are related as suggested by this survey.

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Vendor Positioning

This chapter shows vendor revenues and describes how vendors are positioned now and how the industry is consolidating. It shows how Microsoft, Oracle and Computer Associates are aligning their product lines and are likely to face greater competition in the future. It also describes how vendors are changing their positioning because of the Internet and other market instabilities.

A

Vendor Revenues

Exhibit V-1 provides a list of worldwide vendor revenues for comparison.

Exhibit V-1

Worldwide Vendor Revenues

Vendor	1995 Calendar Year Revenues (\$K)	1994 Calendar Year Revenues (\$K)	Revenue Growth Calendar 1994-95 (%)	Notes
Andersen Consulting	4,000	3,450	16	55% of revenues from C/S
Borland	208	251	-17	Includes sales of software to Novell - approx. \$10M a year for Paradox
Centura Software (formerly Gupta)	54	65	-17	
Compaq	14,755	10,866	36	Servers are growing at 75%
Computer Associates International	3,195	2,400	33	
Data General	1,204	1,142	5	Storage growing at 30%, 40% of revenues, approximately
Dell	3,308	2,777	19	INPUT estimate
Digital Equipment Corporation	14,439	13,777	5	Approx. 5% for sale of storage business, etc. in Fiscal 95
Dun & Bradstreet Software	430	406	6	INPUT estimate of 95 revenues
EDS	12,400	9,960	24	\$3.9 billion in 1995 and \$3.5 billion in 1994 was from GM
Fujitsu	36,600	32,000	14	Fiscal results, 3/31/95 YE
Hewlett-Packard	32,900	26,100	26	
Hitachi (information systems and electronics only)	30,200	25,200	20	Corp revenues \$85 billion FY95 Fiscal results, 3/31/95 YE
IBM	71,900	64,100	12	
Informix Software	709	469	51	
MCI SHL Systemhouse only	15,300 950	13,300 850	11	MCI Prof. Services \$135M in 95 Fiscal SHL revenues YE 8/31/94 INPUT estimate for growth & 95
Microsoft	7,200	5,150	40	
NEC Corporation	43,300	41,150	5	Fiscal revenues, FY 3/31
Computer & Industrial Communications Sys.	20,600 11,800	20,500 11,100	0 6	
Novell	2,004	2,000	0	
Oracle	3,580	2,460	46	
PeopleSoft	76	38	99	
SAP	1,887	1,284	47	
Sybase/Powersoft	957	825	16	

Source: INPUT

The wealth of Japanese vendors and their increased interest in client/server software will change the market over the next ten years. Already, products like Fujitsu's Jasmine are starting to make an impact.

If the growth rates from 1994 to 1995 were to continue for the next five years, then the top U.S. and European C/S vendors would be as shown in Exhibit V-2 below. The Japanese vendors are excluded because they have more lines of business than the typical U.S. vendor and cannot be readily compared.

Exhibit V-2

Top Ten Vendors, 1995 and 2000

Top 10 Vendors For 1995 (excluding Japanese Vendors)	Top 10 Vendors For 2000 (excluding Japanese Vendors)
IBM	IBM
HP	HP
Compaq	Compaq
Digital	Microsoft
EDS	EDS
Microsoft	Oracle
Andersen Consulting	Digital
Oracle	Computer Associates
Dell	SAP
Computer Associates	Andersen Consulting

Source: INPUT

If IBM were to grow at 12% and Compaq at 36%, as they did last year, by the year 2004 Compaq would be larger than IBM, with over \$200 billion in revenues. Clearly, this growth is unsustainable, because the market cannot absorb such a high volume of computer purchases. However, Compaq will challenge established mainframe vendors by that time.

B**Average Size of Account**

For each vendor, the revenues of customers that responded to the survey were estimated and averaged. The average revenue is shown in Exhibit V-3. Since the revenues are only estimates, they have been grouped into ranges.

Exhibit V-3

Average Revenues of Customers by Vendor

Average Revenues (\$M)	Vendors
>6000	Andersen, SAP
4000-5999	Dell, DG, Digital, EDS, Centura, IBM, Informix, Oracle, Sybase
2000-3999	Compaq, Computer Associates, Dun & Bradstreet, HP, local reseller, Microsoft, Novell, NEC, PeopleSoft, Powersoft
<1999	Borland, Fujitsu, SHL

Source: INPUT

The above analysis suggests that Andersen and SAP enjoy their high growth and profitability from targeting few very large accounts. They may have problems in targeting midrange companies, as SAP has stated it wants to do.

At the \$4 billion to \$6 billion range are systems software vendors who can profit from serving mainly large corporations. The \$2 billion to \$4 billion tier suggests companies that are capable of serving a wide range of company sizes. The companies in this range would be potential partners for technology suppliers seeking to expand into medium-sized companies, as well as established vendors. Local resellers can sell to both large and small companies.

Fujitsu in the U.S. is still largely known for its peripherals. Few use its computers. SHL has smaller companies with UNIX systems as some of its customers. Borland's grassroots strategy is reflected in the average size of its accounts.

C

Highly Rated Platforms

From the survey, the average importance rating on a scale from 1 (unimportant) to 5 (very important) for a client or server platform was found for accounts where the vendor had a presence. From this analysis, Exhibit V-4 shows which vendors had an average greater than 4. Software vendors supporting one of these platforms may want to sell through one of the companies whose customers give the platform a high rating.

Exhibit V-4

Vendors with Average Rating Greater Than 4 For Client and Server Platforms

<u>Platform</u>	<u>Vendors</u>
<u>Client Platforms</u>	
MacOS	CA, D&B, Digital, SAP, SHL
Windows 95	Centura, Fujitsu, Informix, Novell, PeopleSoft
Windows NT	Andersen, Borland, Centura, D&B, DG, Digital, EDS, Fujitsu, Hitachi, Informix, Microsoft, NEC, PeopleSoft, SAP, SHL
<u>Server Platforms</u>	
Digital UNIX	Borland, DG, Fujitsu, Hitachi, HP, Informix, NEC, Novell, Oracle, PeopleSoft, Powersoft, SAP
HP-UX	All vendors except Sybase and SAP
IBM Mainframe	Andersen, Borland, Centura, Fujitsu, HP, IBM, Novell, Oracle, PeopleSoft
SCO UNIX	Andersen, D&B, IBM, SAP
Sun Solaris	Andersen, Borland, CA, Centura, D&B, Digital, EDS, HP, IBM, Microsoft, Novell, Oracle, Sybase
Windows NT	Compaq, Computer Associates, D&B, HP, Microsoft, Novell, NEC, PeopleSoft, Powersoft

Source: INPUT

D

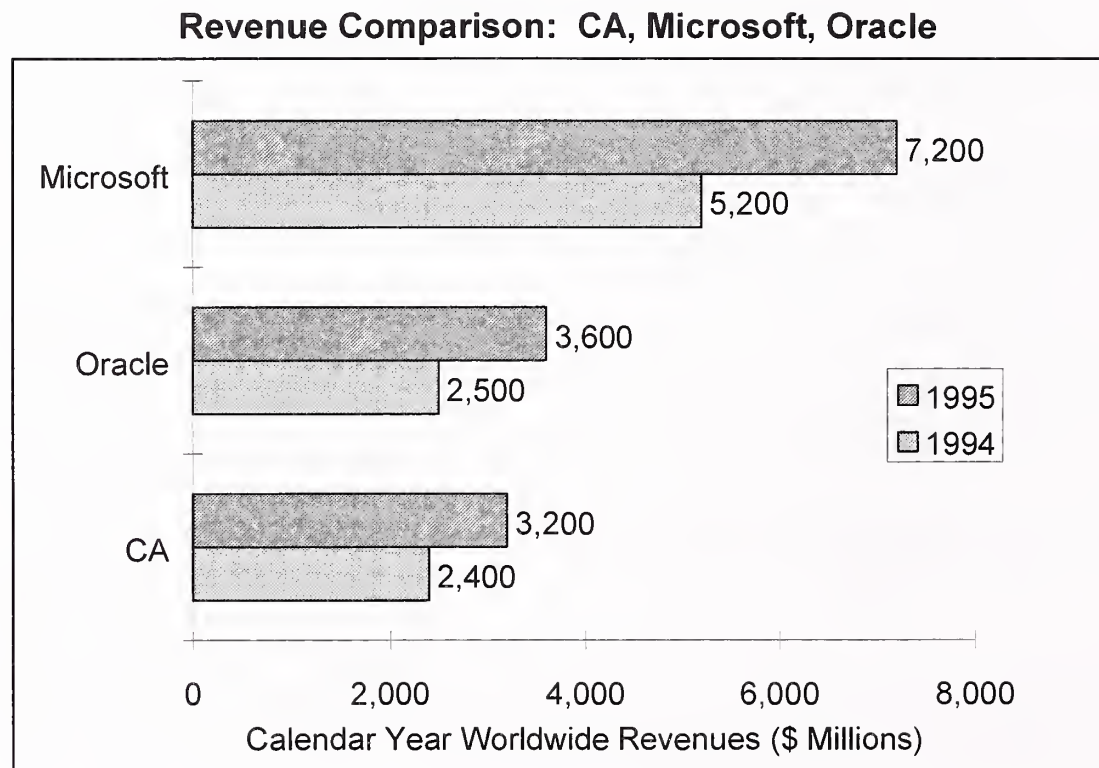
Microsoft, Oracle and Computer Associates Battle It Out

Competition between Microsoft's leader Bill Gates and Oracle's Larry Ellison has been widely publicized. A closer look reveals a hidden competitor, Charles Wang, founder and chairman of Computer Associates. As the software market matures, these three companies are increasingly invading each other's territories.

1. Revenue Comparison

A revenue comparison of the three companies is provided in Exhibit V-5. The growth rates are Oracle—46%, Microsoft—40% and Computer Associates—33%. Even with acquisitions like LEGENT, CA is not growing fast enough to keep pace with Oracle and Microsoft.

Exhibit V-5



Source: INPUT

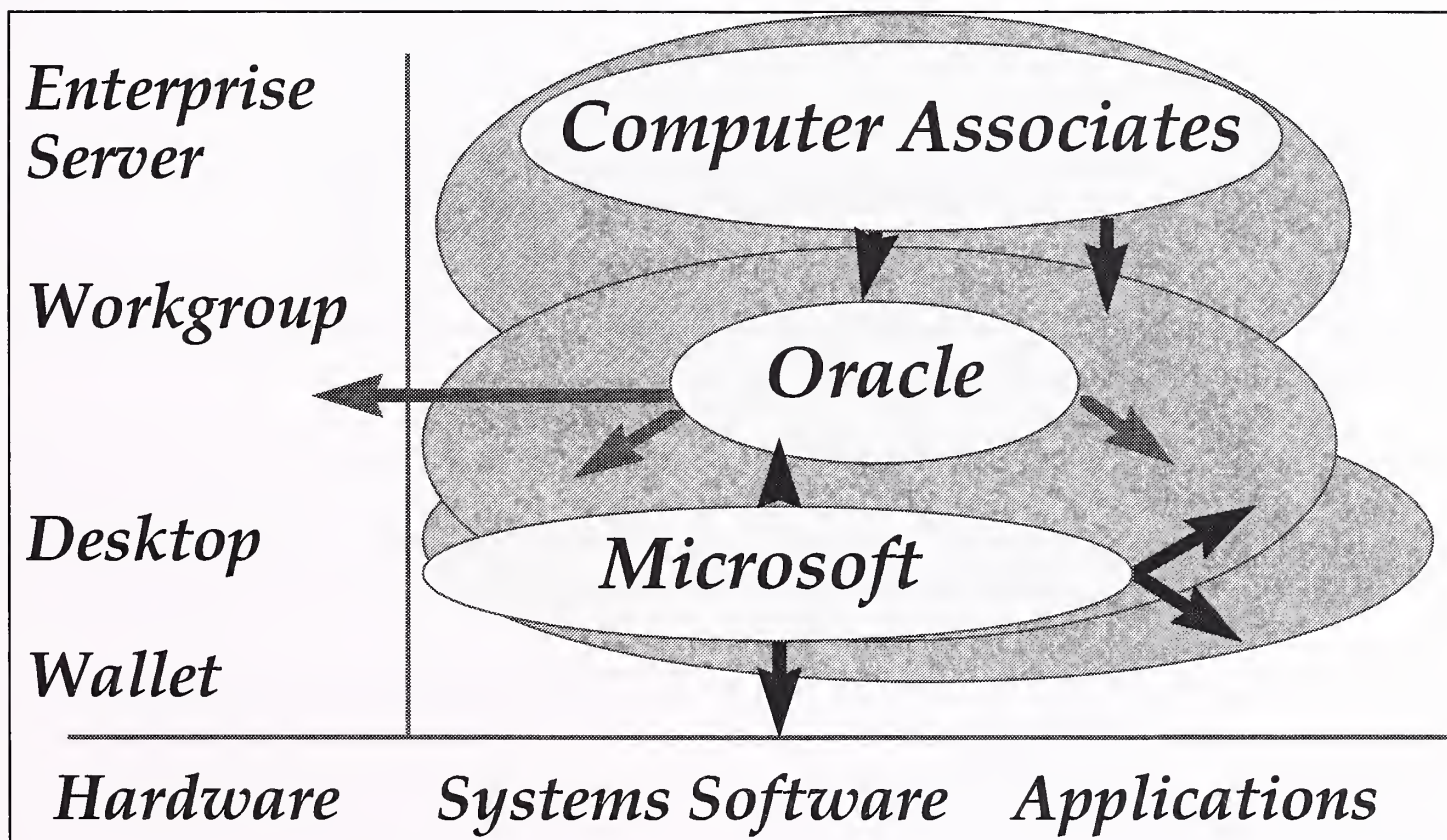
2. Strategic Comparison

The strategies of the three companies are compared in Exhibit V-6. The vertical axis shows the range of platforms supported, from handheld wallet computers to enterprise servers. The horizontal axis shows the migration from hardware vendor to systems software supplier to applications vendor. Oracle has indicated that with hardware manufacturers it will move into the Internet appliance market. Apart from Microsoft keyboards and mice, this is the first of these big three vendors to influence the hardware market.

Microsoft is moving from the desktop to smaller wallet devices, such as personal digital assistants (PDAs), and also into the workgroup server arena. Oracle, which has installations for both workgroup and enterprise systems is also broadening its reach into mobile devices, personal desktop databases and massive enterprise systems. Computer Associates, whose main business comes from mainframes, is moving into midrange systems with CA-Ingres and CA-Unicenter.

Exhibit V-6

Strategy Comparison: CA, Microsoft, Oracle



Source: INPUT

3. Product Line Comparison

Three companies' product lines are compared in Exhibit V-7. A striking omission is that CA has no operating system platform. A relationship with the Santa Cruz Operation that controls UNIX could strengthen CA's position significantly. Systems management is CA's stronghold; it is an emerging software market for both Microsoft and Oracle. Microsoft is focusing on Windows NT systems management, partnering with CA, which in turn has obtained some of its software from ICL. Oracle has a strong partnering program in the systems management area, but is focusing its systems management software on database support.

Exhibit V-7

Product Line Comparison: CA, Microsoft, Oracle

	Computer Associates	Microsoft	Oracle
Operating System	-	Personal and Workgroup	Appliance OS
Systems Management	Enterprise	MS SMS for Windows NT	Database Focused
Databases	Enterprise	Desktop & Workgroup	Workgroup & Enterprise
Applications	Manufacturing, Financial, HR	Office, Home, Back Office	Office and Enterprise

Source: INPUT

4. Outlook

Computer Associates needs to grow faster if it is to keep up with Oracle and Microsoft. Microsoft needs more enterprise applications.

Microsoft's client software business will see lower margins as Intranets unfold. Its Windows operating system, where it holds a near monopoly, will be an exception.

Oracle is the best positioned of the three vendors. It is more agile and faster growing than CA. It is able to support more platforms than Microsoft. Its applications are starting to cover vertical markets as well as cross-industry markets.

Microsoft is the strongest in consumer software publishing, an area in which Oracle and CA will find it hard to catch up unless they make major acquisitions.

E

Can PC Vendors Challenge Mainframes?

PC vendors like Dell and Compaq are aggressively working to provide both client PCs and servers to corporations. From 1994 to 1995, Compaq saw revenues from its server product line grow 75% to \$3.2 billion, its total revenues overtaking those of Digital Equipment, and only IBM and HP in the U.S. ahead of it in revenues.

Dell and Compaq's efficient distribution systems make them a threat to established systems vendors. Intel and its platform vendors are working to define faster I/O standards that enable rack-mounted Intel-based servers to be clustered. Do these vendors threaten the established server suppliers like HP, Sun and IBM? HP and IBM are less vulnerable as they have sizable PC businesses. Data General is another player that may make a comeback with multiprocessor-based Intel architecture servers. By the end of 1996, Intel-based server machines that challenge mainframes will start to appear.

INPUT believes that this is only the first step toward challenging mainframes, which are much higher performance machines. The architectures being proposed by Data General and others will be ideal for workgroup and departmental servers. For critical transaction processing tasks it will be hard to beat a mainframe architecture in the next five years. However, if the business processing is distributed instead of centralized, then the PC servers are a real competitive threat. For example, currently specific data fields on tax forms are processed on high-volume computers at regional centers at a certain time of year. If the process were decentralized and individuals could choose a date to file, so that filings were spread out over the year, and they entered the data from their PC, then many networked smaller computers may be able to do the job.

F

Are Services Needed To Be a Successful C/S Vendor?**1. Services Continue To Boost Hardware Manufacturers' Revenues**

Server hardware vendors are turning to services to increase their revenues. Digital in particular is emphasizing its networking expertise to turn around its business. Japanese hardware manufacturers, with strong installed bases at home, often become peripheral suppliers in the U.S. NEC is building up its PC server business, Hitachi continues to compete with mainframes and storage systems, and Fujitsu not only offers its own products, but is also an

investor in Amdahl. Services can augment a supplier's business—in Digital's case, with higher margins than the product business.

2. Faster Growth Is Possible by Using Others For Services

The high growth of SAP and Oracle is fueled by their ability to persuade services vendors to integrate their software. Although both vendors offer services, they would prefer to keep them at or below 25% of revenues. This enables them to gain market share quickly.

G

The Internet Drives Vendors in New Directions

1. Multimedia Database Servers Debut from Major Vendors

Database vendors, particularly Informix and Oracle, had strong years in 1995 and growth is likely to continue. Sybase had some problems with scalability, but these have been addressed in System 11. Microsoft is expected to increase its presence in LAN databases with SQL Server on Windows NT over the next few years.

Computer Associates launched Jasmine, a multimedia database to support the Internet, based on Fujitsu's object-oriented technology. This follows the announcement that Informix acquired Illustra, a multimedia database. Following closely behind is Oracle's Version 8, which is designed to support. However, Microsoft and Oracle are growing much faster than CA and will challenge its core systems management business.

2. Novell Carves Out Position in Network Software

Novell restructured recently to focus on networking and distributed network services (note that software is not in INPUT's standard definition of Network Services), such as directories. Although NetWare, its flagship network operating system, is threatened from UNIX and Microsoft solutions, it still provides cross-platform network support. Novell should revive in 1996 as problems with the Internet and Windows NT-based networks require more powerful solutions.

3. Applications Continue To Grow Despite the Impact of the Internet

Applications vendors are seeing high growth in corporate environments. However, if they do not embrace Intranet technology, many will be vulnerable. Another move that applications vendors must make is to support

distributed object infrastructures, this may mean Microsoft's Network OLE or it may mean Sun's Java, standards are still emerging.

H

Intense Competition Forces Business To Change

1. Tool Vendors See Shakeout

Application development tool vendors are seeing a shakeout. Intranets mean that some corporate applications can be developed more simply than with traditional C/S tools using web browsers and servers. This has made Borland and Centura Software (formerly Gupta) vulnerable. They are both redefining their businesses to focus on the Internet, whether this is enough to stop their decline will be seen in the next two years.

2. Applications Battle for the SOHO Market

The next battlefield will be in the small business and branch office market. Oracle is addressing this area with development platforms that combine relational database technology with web servers. Dun & Bradstreet Software will be restructured in 1996, enabling it to be freed from its parent. As vendors find corporate markets getting saturated many are turning to the SOHO (small office, home office) market. This may be supported by major corporations who have employees, subcontractors and consultants working out of their homes.

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Definitions

This section provides definitions of vocabulary used in the report. More definitions can be found in INPUT's *Definition of Terms*.

Agent	An agent is a set of instructions that can carry out tasks automatically. It is usually written in a high-level language script and may run across a network to send messages or find information.
API	Application Programming Interface—this provides specifications for programmers.
Client	When used in C/S it refers to the computer platform accessed by a user, such as a PC, workstation or PDA.
Client process	A process object initiating requests on another object. At the programming level, clients look at ORBs and object implementations through the perspective of a language mapping.
Client program	Any program initiating requests on another object. At the programming level, clients look at ORBs and object implementations through the perspective of a language mapping.
Component	Component refers to software component, a piece of software with documented interfaces that a programmer can use to build an application.
CORBA	Common Object Request Broker Architecture.

CORBA compliance	In compliance with the CORBA standards as defined by the OMG. To be determined as part of the X/Open branding program and a related OMG program called "Profiling."
CORBA 1-compliance	Objects on different platforms and networks can communicate across various platforms transparently using a single brand of ORB.
CORBA 2-compliance	Intended to enable objects on different platforms and networks to communicate transparently using different brands of ORBs. CORBA 2 accomplishes this by providing for two ORB interoperability schemes based on two different gateway message formats, called the General Inter-ORB Protocol (GIOP) and the Environment-Specific Inter-ORB Protocol (ESIOP).
Development Environment	Set of software used by programmers for developing applications that typically consists of compilers, debuggers, visual editors, profilers and performance optimizers.
Development Tools	Short for "application development tools."
Distributed System	A system that runs across multiple computers.
DLL	Dynamic Linked Library, a software component of pre-compiled code that can be linked into an application.
Dynamic Invoke Interface	Particular applications will work best if an object invocation is constructed at execution time, supplying information about the operation to be performed and the types of parameters being passed. The dynamic invoke interface provides this capability.
Ecash	Electronic cash, digital cash, a form of currency used to transact business over computer networks.

Environment-Specific Inter-ORB Protocol (ESIOP)	The first ESIOP gateway implementation defined is based on the OSF's Distributed Computing Environment (DCE) and others are likely for COM, Open Network Computing (ONC), etc. They would also use TCP/IP, OSI, IPX/SPX or another transport protocol, whose details would be masked by the higher level interface.
Framework	A specification or implementation of software that can be used to build an application. It may consist of classes and methods. Motif and the Common Object Request Broker Architecture (CORBA) are examples of frameworks.
Gateway	Software that connects one environment to another. It often translates formats and routes code from one application to another.
General Inter-ORB Protocol (GIOP)	The first GIOP gateway implementation is called the Internet Inter-ORB Protocol (IIOP) and is based on TCP/IP; IIOP is mandatory for CORBA 2 but it can be achieved by a native TCP/IP implementation as well as by a presumably less efficient bridge (i.e., in theory, it is not necessary to deploy TCP/IP stacks on every node). Other GIOPs will probably be developed to run on top of OSI or NetWare.
GUI	Graphical User Interface—a windowing system like Microsoft Windows or X-Windows with Motif that displays graphical objects.
Implementation Repository	Lets the ORB locate and activate object implementations. Also can store additional information associated with implementation such as debugging information, administrative control, resource allocation, security, etc.
Interface Definition Language (IDL)	Defines object types by specifying their interfaces, a set of named operations, and the parameters to those operations.

Interface Repository	Provides persistent objects that represent the IDL information in a form available at run time. Lets a program determine what operations are valid on an object when it encounters an object with an unknown interface, and invoke that object.
Language Mapping	Provides flexibility in defining language-specific data types and procedure interfaces to access objects through the ORB. Different programming languages, both object-oriented and non-object-oriented, may prefer to access CORBA (or CORBA-compliant) objects in different ways, but the standard says that a particular language mapping to CORBA should be the same for all ORB implementations.
MacOS	The operating system for the Apple Macintosh.
Messaging	A general term that describes communication that stores and forwards information. It may also support queues of objects waiting for an event in a network. An example of messaging software is electronic mail or software that supports on-line information services.
Networked ORBs	Provide some set of or sets of language mappings and support multinode operation via the IIOP, another GIOP, or an ESIOP. IIOP support based on TCP/IP is mandatory for an ORB to be termed CORBA compliant.
Object Management Architecture (OMA)	OMG architecture that specifies object language interfaces, Common Object Services Specifications (COSS), Common Facilities and Common Object Request Broker Architecture (CORBA) specifications.
Object Request Broker (ORB)	OMG terminology for the message-based communications interface between objects; an ORB provides the mechanism by which objects transparently make requests of, and receive responses from, other objects; the term has become commonly accepted, but not all products that

	perform these functions are called ORBs and not all ORBs meet OMG specifications.
Open systems	In this report it describes systems that can run on multiple UNIX and/or Windows operating systems, rather than proprietary environments like VMS (even Open VMS) or MVS (even with POSIX compatibility).
Operating environment	Modern term for operating system plus its application development tools.
ORB Interface	No matter which of the above interfaces makes sense in certain applications, basic operations, such as the operation that returns an object interface type, are common to all objects and are handled directly by the core via the ORB interface. There would probably be few of these common operations, but the standard's flexibility leaves that up to the development process.
OS	Operating system.
Platform	This is the software or hardware that an application program runs on.
POSIX	A standard for operating systems to ensure some level of portability of software code that runs on it. Standards are published by X/Open.
Program	The term is meant to include a wide range of possible constructs, including scripts, loadable modules, etc., in addition to the traditional definition of an application or utility.
RPC	Remote procedure call, an instruction given usually across a network to perform a remote function, such as a command associated with a server database or file.
Standalone ORBs	Function on single nodes with some set or sets of language mappings and gateway-oriented interoperability, if required.

Suites	Sets of applications or packages. Office suites typically consist of a word processor, a spreadsheet, and a database or electronic mail package.
Telecommuting	Working at home, while connected to an office computer.
URL	Universal Resource Locator—an address like http://www.input.com for identifying resources on the World Wide Web.
Visual Development Tool	This is the software needed to build an application. It may include a visual editor, a forms designer, a report writer, a compiler, an interpreter, a debugger or a source code control system that enables programmers to share coding tasks.
Windows	Used in this report to refer to Microsoft's Windows if it starts with a capital letter. If it starts with a small letter, it may refer to any software that controls the windows on a computer screen. A window may also be the window seen on a computer screen.
Workgroup	A group of 3 or more, typically less than 100 individuals, who share work and collaborate on a network.



Vendor Names and Addresses

This chapter provides names and addresses of vendors mentioned in the report.

A

Vendors and Organizations

Exhibit B-1

Names and Addresses of Vendors

Company	Notes
Andersen Consulting 100 South Wacker Drive Chicago, IL 60606 Tel: 312-507-2900 Fax: 312-307-7965	Strong proponent of object technology for systems integration in diverse markets, especially manufacturing. Promoting demand chain management solutions using the Internet, SAP and other leading applications.
AT&T Global Information Solutions (was NCR) 1700 S. Patterson Boulevard Dayton, OH 45479 Tel: 513-445-5000 Fax: 513-445-4184	AT&T GIS is a leader in C/S high-end transaction processing systems, with strong presence in retail and financial markets. It will spin off from parent AT&T in 1996.
Borland International 100 Borland Way Scotts Valley, CA 95066 Tel: 408-431-1000 Fax: 408-431-4123 http://www.borland.com	Leading provider of application development tools. Announced Latte as a development environment for the Internet. Delphi is a client/server development tool. Also markets Paradox and dBase databases.
Centura Software (formerly Gupta) 1060 Marsh Road Menlo Park, CA 94025 Tel: 415-321-9500 Fax: 415-321-5471 http://www.gupta.com	One of the first C/S application development tool vendors, trying to thwart competition with Internet development tools and tools to design larger systems.

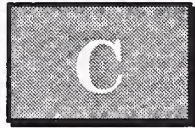
Exhibit B-1 (CONT.)

Company	Notes
Computer Associates International 1 Computer Associates Plaza Islandia, NY 11788 Tel: 516-342-5224 Fax: 516-342-5329 http://www.cai.com	Leader in systems management tools and services. CA-Unicenter is flagship C/S product. Some Windows NT software is licensed from ICL. Also licenses OODBMS from Fujitsu.
Digital Equipment Corporation 110 Spitbrook Road Nashua, NH 03062 Tel: 603-881-1894 Fax: 603-881-2790 http://www.digital.com	Digital bridges the UNIX, Windows NT, PC and proprietary Open VMS architectures with its enterprise platforms. It is strong in connectivity and messaging technologies.
Hewlett-Packard 19310 Pruneridge Avenue Cupertino, CA 95014 Tel: 408-447-4042 Fax: 408-447-5809 http://www.hp.com	HP has a complete line of C/S systems and services, from PCs to workstations to enterprise servers. It is particularly strong in third-party software relationships and systems management. It also is strong in development tools and objects.
Hitachi Computer Products (America) 437 Madison Ave. 21 st Floor New York, NY 10022 Tel: 212-751-6302 FAX: 212-751-6368 http://www.hitachi.com	This division of leading technology supplier, Hitachi, has begun to market its OT capability with a concentration on its application in OLTP.
IBM Corporation 1 Old Orchard Rd. Armonk, NY 10504 Tel: 914-765-1900 Fax: 914-765-4190 http://www.ibm.com	Leading C/S enterprise systems vendor. IBM was an early leader in object technology implemented into the OS/400 operating software. SOM debuted with OS/2 and has been or is being ported to all IBM operating environments.
Illustra Information Technologies (an Informix subsidiary) 1111 Broadway 20th Floor Oakland, CA 94607 Tel: 510-652-8000 http://www.illustra.com	Successfully transitioned from being a technology vendor of ORDBMS technology to being an Internet solutions supplier with an innovative database for storing multimedia, hyperlinked documents.
Informix Software 4100 Bohannon Drive Menlo Park, CA 94025 Tel: 415-926-6300 Fax: 415-926-6593 http://www.informix.com	Leading database vendor, strong in parallel servers and UNIX markets. Strong VAR program.
Intel Corporation PO Box 58119 Santa Clara, CA 95052 Tel: 408-765-8080 Fax: 408-765-1821 http://www.intel.com	Leading microprocessor vendor. Also markets PC boards and supercomputers.

Exhibit B-1 (CONT.)

Company	Notes
MCI 780 Johnson's Ferry Rd Atlanta, GA 30342 Tel: 404-250-5500 Fax: 404-250-5591 http://www.mci.com	Providing on-line services for the Internet. Also acquired SHL Systemhouse, leading systems integrator and outsourcing vendor for C/S solutions.
Microsoft Corporation 1 Microsoft Way Redmond, WA 98052 Tel: 206-882-8080 Fax: 206-936-7329	Leader of the desktop environment with Windows and the OLE 2 standard for interconnecting applications. Extending its technology into the enterprise server arena is Microsoft's challenge.
Netscape 501 E. Middlefield Rd. Mountain View, CA 94043 Tel: 415-254-1900 Fax: 415-528-4124 http://www.netscape.com	Leading supplier of Web browser and server software. May challenge established database vendors with Web servers. Challenges development tool vendors with Internet-compatible solutions.
NeXT Computer Inc. 900 Chesapeake Dr. Redwood City, CA 94063 Tel: 415-366-0900 Fax: 415-780-3714 http://www.next.com	NeXT offers its Portable Distributed Objects (PDO) object model and the Enterprise Objects Frameworks products under the banner of NEXTSTEP, a cross-platform development and run-time system for three-tiered, applications.
Novell 122 E 1700 South Provo, UT 84606 Tel: 801-429-7000 Fax: 801-377-9353 http://www.novell.com	Novell aims to be a leader in network services such as directories, addressing, transaction management and network administration.
Open Market 245 First Street Cambridge, MA 02139 Tel: 617-621-9500 Fax: 617-621-1703 http://www.openmarket.com	Provides secure Web server, Netscape is a competitor. Also provides electronic commerce services.
Oracle Corporation 500 Oracle Parkway Redwood Shores, CA 94065 Tel: 415-506-7000 Fax: 415-506-7151 http://www.oracle.com	Leading database vendor with Developer/2000 development tools and various object-oriented solutions including Power Objects. Oracle will increase its presence in vertical client/server applications. It also aims to reduce systems integration effort by packaging solutions for branch offices and workgroups.
ParcPlace-Digitalk 999 E. Arques Ave. Sunnyvale, CA 94086 Tel: 408-481-9090 Fax: 408-481-9095 http://www.parcplace.com	The August 1995 merger of ParcPlace and Digitalk combines two companies with synergistic OT product capabilities on UNIX and Windows systems, respectively. Visual Smalltalk from Digitalk and Visual Works from ParcPlace are application development tools for Smalltalk environments and client/server programming.
PeopleSoft 1331 N. California Blvd Walnut Creek, CA 94596 Tel: 510-946-9460 Fax: 510-946-9461 http://www.peoplesoft.com	Leader in C/S HR software that has led to accounting and manufacturing C/S solutions.

Company	Notes
Powersoft (a Sybase subsidiary) 561 Virginia Road Concord, MA 01742 Tel: 617-229-2200 Fax: 617-272-9076 http://www.powersoft.com	A Sybase subsidiary. Developing more scalable versions of its PowerBuilder and PowerMaker application development tools. Also markets Watcom database. Vulnerable to new products from Spider Technologies for the Internet, but agile enough to react positively.
The Santa Cruz Operation (SCO) 400 Encinal Street Santa Cruz, CA 95060 Tel: 408-425-7222 Fax: 408-458-4227 http://www.sco.com	Leading independent vendor of UNIX operating system and UNIX software products. Provides affordable platform for branch offices and small organizations.
SAP America, Inc. 701 Lee Road, Suite 200 Wayne, PA 19087 Tel: 610-725-4500 Fax: 610-725-4555 http://www.sap.com	SAP's R/3 is a leading integrated enterprise C/S application, with success in multinational and smaller firms. SAP is particularly strong in high-technology manufacturing markets and oil and gas.
Silicon Graphics (SGI) 2011 N. Shoreline Blvd Mountain View, CA 94043 Tel: 415-960-1980 Fax: 415-961-0595 http://www.sgi.com	Leader in 3-D workstations and high-performance servers. Servers are used for WWW and supercomputing as well as databases and 3-D support. Entering data mining market.
Sun Microsystems 2550 Garcia Avenue Mountain View, CA 94043-1100 Tel: 415-960-1300 Fax: 415-969-9131 http://www.sun.com	Scalable computing systems from workstations, including notebooks, to servers based on SPARC microprocessor and Solaris OS.
SunSoft 2550 Garcia Avenue Mountain View, CA 94043-1100 Tel: 415-960-3200 Fax: 415-336-0362 http://www.sun.com/sunsoft	SunSoft has a leading position in distributed UNIX computing that it can leverage. NEO is Sun's distributed object environment and toolset that uses NeXT's OpenStep software. SunSoft also provides Solaris operating system for Intel platforms, as well as SPARC, and Solstice systems management software, as well as application development tools.
Sybase 6475 Christie Avenue Emeryville, CA 94608 Tel: 800-879-2273 Fax: 510-658-9441 http://www.sybase.com	Application development tools, middleware and databases are Sybase's main products. Sybase has several subsidiaries, including Micro Decisionware and Powersoft. The Sybase 11 database is emerging, which should improve scalability and performance.



User Questionnaire

This appendix provides the user questionnaire for the 110-person survey.

A

User Questionnaire

1. What organization do you represent?
Corporate/Departmental IS/User Department
2. Would you please rate the following client software platforms in order of importance to you over the next 5 years for your PCs or workstations?
Only rate those that you plan to use on a scale of 1 to 5, where 1=least important, 5=most important. It is assumed when you select a product that you will upgrade to its successors over time.

- Apple MacOS
- Microsoft Windows NT
- NEXTSTEP/OpenStep
- UNIX - Digital UNIX
- UNIX - HP-UX
- UNIX - IBM AIX
- UNIX - SCO
- UNIX - Silicon Graphics
- UNIX - Sun Solaris
- UNIX - Other
- Other

3. Would you please rate the following server software platforms in order of importance to you over the next 5 years? Only rate those that you plan to use on a scale of 1 to 5, where 1=least important, 5=most important. It is assumed when you select a product that you will upgrade to its successors over time.

- Apple MacOS
- Microsoft Windows NT
- NEXTSTEP/OpenStep
- UNIX - Digital UNIX
- UNIX - HP-UX
- UNIX - IBM AIX
- UNIX - SCO
- UNIX - Silicon Graphics
- UNIX - Sun Solaris
- UNIX - Other
- IBM-compatible mainframe
- Digital OpenVMS
- Other

4. On a scale of 1 to 5, would you give your reaction to the following advantages of C/S computing: 1=strongly disagree, 5=strongly agree.

Easier user training	No opinion/1 2 3 4 5
Can combine jobs	No opinion/1 2 3 4 5
Can run off-the-shelf software package	No opinion/1 2 3 4 5
Lower maintenance costs	No opinion/1 2 3 4 5
Can reprogram system easily	No opinion/1 2 3 4 5
Many users can access the same info	No opinion/1 2 3 4 5
Users can communicate faster	No opinion/1 2 3 4 5
Better communications with suppliers	No opinion/1 2 3 4 5
Better communications with customers	No opinion/1 2 3 4 5
Other	No opinion/1 2 3 4 5

5. On a scale of 1 to 5, would you give your reaction to the following disadvantages of C/S computing: 1=strongly disagree, 5=strongly agree.
- | | |
|--|----------------------|
| Slow response times for users | No opinion/1 2 3 4 5 |
| Unreliable network | No opinion/1 2 3 4 5 |
| Hard to integrate with existing systems | No opinion/1 2 3 4 5 |
| Expensive to support upgrades on PCs | No opinion/1 2 3 4 5 |
| Security weaknesses | No opinion/1 2 3 4 5 |
| Costs are higher than expected | No opinion/1 2 3 4 5 |
| Communication between IS and users poor | No opinion/1 2 3 4 5 |
| Standards are not mature enough | No opinion/1 2 3 4 5 |
| Cannot get senior management to invest sufficiently in new systems | No opinion/1 2 3 4 5 |
| Other | No opinion/1 2 3 4 5 |
6. Approximately how big is your budget for software and services, including IT consulting, IT training, programming services and systems integration? Please exclude hardware figures—if this is not possible, say so.
- Don't know/Has no budget/0-100K/101K-250K/250K-1M/1M-5M/5M-25M/25M-50M/>50M
7. Approximately how big is your budget for all client/server software and services, including IT consulting, IT training, programming services and systems integration? Please exclude hardware figures—if this is not possible, say so.
- Don't know/Has no budget/0-100K/101K-250K/250K-1M/1M-5M/5M-25M/25M-50M/>50M
8. What percentage of your budget for client/server applications is spent on the following:
- Maintenance and upgrades _____
- Packaged applications software _____
- Packaged systems software _____
- Contract programmers, systems integrators or professional services _____
- Other _____

9. Approximately how much does your organization expect to spend on software and services for each of the following in 1996? What will be your three most important expenditures? Will any of these be for C/S systems? Indicate in the last column if the system is implemented with a C/S architecture.

System	Budget Size for 1996	Rank	C/S
	\$U.S.	1/2/3	Y/N
Integration of Enterprise Systems	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Integrated Accounting	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Integrated HR	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Inventory Management	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Computer/Telephony Integration	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Lotus Notes Applications	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Electronic Mail (not Lotus Notes)	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Document Imaging System	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Billing System	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
User Directory System	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Internet World Wide Web Server	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Other	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Other	<100K/101-250K/251K-1M/1M-5M/>5M	___	___
Other	<100K/101-250K/251K-1M/1M-5M/>5M	___	___

10. For the above, was the budget for:
- a) the entire company, worldwide
 - b) all U.S. systems
 - c) all systems at your site
 - d) all systems in your department

11. On average, how much will your budget for C/S software and services increase from 1995 to 1996?
No increase /0%/0-10%/10-20%/20-30%/30-50%/50-100%
12. Which applications are you likely to run with text-based user interfaces on terminals or PCs used as terminals for the next three years?
13. (a) Do you have non-UNIX-based mainframes (e.g., IBM-compatible mainframes running MVS) or minicomputers with proprietary operating systems (e.g. VMS) running applications? YES/NO

(b) If YES, when do you expect to replace these with machines running more modern software architectures such as UNIX or Windows NT?
Never/in 1995/in 1996-7/in 1998-2000
14. Are you addressing or planning to address turn-of-the-century problems, for example in application software programs that cannot handle the date 1/1/2000? YES/NO
If YES, will you use internal programmers or bring in external resources?
INTERNAL/EXTERNAL
15. Do you still use COBOL programmers? YES/NO
If YES, approximately how many are employees and how many are consultants?
If YES, when do you expect to replace them with programmers that use more modern languages?
Never/in 1995/in 1996-7/in 1998-2000
16. How would you rate your satisfaction with the following C/S vendors on a scale of 1 to 5:

Andersen, Borland, Compaq, Computer Associates, Data General, Dell Computer, Digital Equipment, Dun & Bradstreet, EDS, Fujitsu, Gupta (now Centura), Hitachi, HP, IBM, Informix, Local Reseller, Microsoft, NEC, Novell, Oracle, PeopleSoft, Powersoft, SAP, SHL, Sybase

In addition, user demographic information on company size, industry, SIC code and number of employees was collected.

